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COMPUTERWORLD

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Harvard Business School requires first-year MBA students to study information systems. Page 85.

Buyers clamor for fuller PS/2 picture

BY PATRICIA KEEFE
CW STAFF

Flush with excitement about IBM's new Personal System/2 family and Operating System/2, users are hungry for information about the IBM cornucopia of products unleashed two weeks ago.

Amidst much fanfare on April 2, IBM introduced its new generation of personal computers — four machines based on Intel Corp. 8086, 80286 and 80386 processors. Also unveiled were the OS/2 protected-mode operating system and a host of communications products, including enhancements to the Token-Ring network and the PC Network.

Several corporate users said they have already decided to switch over to the new IBM personal computer line. American Airlines, Inc. revealed last week that it has already placed an order for 8,000 Personal System/2s. Others said they would commit 100% of next year's microcomputer budget to purchasing those machines. And many MIS buyers are cutting or scaling back their plans to purchase

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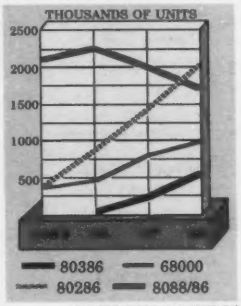
The microprocessor market shifts
U.S. shipments of 16-bit and 32-bit PCs will overtake 8088/8086 processors



INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART

Lotus sued for Visicalc infringement

BY DOUGLAS BARNEY
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp.'s effort to gain copyright protection for the "look and feel" of software took an unexpected turn last week when the company and its founder, Mitchell D. Kapor, were charged in a lawsuit with infringing on the copyright of Visicalc and misappropriating trade secrets.

In what is perhaps the oddest twist yet in a messy series of recent copyright lawsuits, Lotus was sued by SAPC, Inc., a firm made up of ex-Software Arts,

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DB2 update readied

But referential integrity, dictionary lacking

BY CHARLES BABCOCK
CW STAFF

IBM is planning to announce a new release of DB2 in late May or early June that is said to contain several functional improvements, including enhancements of its Query Management Facility and small performance improvements.

However, referential integrity, one of the most sought-after features, will not be included in the announcement, industry sources said. In addition, while a data dictionary is widely anticipated, its appearance with the next release is considered doubtful. What are more likely are DB2 catalog extensions, according to industry observers and IBM customers.

"I would not expect a dictionary with the next release," warned Sheila O'Brien, director of the data management systems support group of Arthur Andersen & Co., a Big Eight accounting firm in Chicago.

IBM officials have acknowledged that development is under way on a DB2 dictionary but they have shied away from tying the product to a time frame that would include it in the next release.

Applications programmers will be able to build more dictionary-type functions into their programs through the use of enhancements to the DB2 catalog or through DB2 files that store systems information rather than applications information, several industry sources indicated.

"IBM is not going to call it a dictionary. It's going to call it catalog extensions," observed Richard Finklestein of the Codd & Date Consulting Group in Chicago.

Sign of commitment

Whatever improvements are announced, they are likely to be taken by IBM customers as a sign of continued commitment to rapid development of the relational data base management system.

"I'm really pleased IBM is coming out with another release," said George Merkle, director of information technologies at The Brown Group, Inc., a DB2 user in St. Louis.

DB2 was announced in early 1985 and given a performance upgrade in Release 2.0 in February 1986.

IBM is also expected to belatedly provide time and date data-

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HIGH-TECH SENATOR

Lautenberg in Capitol role

BY GLENN RIFKIN
CW STAFF

A week after Frank Lautenberg was elected to the U.S. Senate in 1982, he told an enthusiastic ADAPSO annual meeting, "While I can't go to the Senate as a captive of any one group, count on me, guys!"

Five years after taking office, the New Jersey Democrat is still called "the senator of information services," despite the fact that his legislative activities clearly reflect a commitment to his state more than to his former industry.

But Lautenberg — the former chairman of Automatic Data Processing, Inc. and ex-president of ADAPSO — has not forgotten the former colleagues who helped send him to Washington. He has taken on issues

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BRAD MARKEL, GAMMA LIAISON

Sen. Frank Lautenberg

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Physician, heal thyself. IBM attempts to soothe users by addressing response-time bottlenecks and outlining plan to alleviate sources of slow networks but fails to offer tangible solutions or delivery dates. Pages 4, 5.

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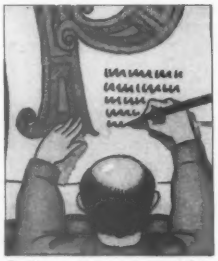

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Quotable

"It's like New Coke and Coke Classic; there will be markets for both the older IBM product line and the new Personal System/2s."

SAM MISSIMER
DIRECTOR OF MARKETING AND ADVERTISING
CLANCY PAUL, INC.

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AFIPS eyes fill-in pilot for NCC show

BY ALAN J. RYAN
CW STAFF

RESTON, Va. — The American Federation of Information Processing Societies (AFIPS) confirmed last week that it is considering contracting out management responsibilities for future National Computer Conference (NCC) shows.

"No commitment or decision has actually been made, other than the decision that this is something that should be explored seriously," said Jack Moshman, president of the 11-member AFIPS group.

With NCC '87 slated for June 15-18 in Chicago's McCormick Place, Moshman said it is unlikely that management for the show will be contracted out.

Rolland Arndt, chairman of the board of NCC, said the reason contracting is being explored is to "achieve some approved efficiencies. A single conference does not really warrant a full-time staff."

"This does not mean that AFIPS has no money or is bankrupt," Moshman added. "Net worth is still comfortably in the seven-digit range. But income has been cut radically from a couple of years ago, and we have adjusted our outgo to be commensurate with our income."

With attendance dropping from 85,000 in 1985 to 45,000 in 1986 and the number of exhibitors falling off as well, efficiency is a priority with NCC.

Blame it on Vegas

Reasons for the drop, some say, are poor location and timing. "When we go to Las Vegas, the gross number of attendees goes down," AFIPS' executive director John Gilbert said. "Las Vegas doesn't have the local draw like other cities do."

Arndt blamed the economy as a whole and the fact that NCC grew so fast that "we got ourselves locked into unfavorable dates in Las Vegas and Chicago — too far into the summer."

He said the partners that sponsor NCC have planned future shows for Los Angeles, New York and Chicago.

Moshman denied reports that some smaller member companies want to dissolve AFIPS.

"I've heard nothing from any of the smaller societies indicating they want to dissolve the federation — nor from any of the larger ones," he said.

Concerning a report that AFIPS' member societies are plagued by infighting over the running of NCC, Moshman said, "I wouldn't say there has always been unanimity of opinion, but I would not characterize it as infighting."

Sidekick Plus gets boost

Borland expands popular desktop organizer

BY PEGGY WATT
CW STAFF

SCOTTS VALLEY, Calif. — Borland International said it expects to release a significant update of its top selling Sidekick software during the last half of this year.

The new release, tentatively called Sidekick Plus, reportedly expands on current features of the so-called "desktop organizer" package, offering multiple notepads and calendars, a choice of calculators and built-in macros from Superkey, a Borland keyboard-style macro generator.

Sidekick Plus also includes a communications program. The user can customize many of the program's pop-up features to make Sidekick Plus "a more personal kind of product," according to a Borland spokeswoman.

An applications program interface is scheduled for release in June, the spokeswoman said. A new feature in Sidekick Plus, the interface is said to allow other developers of terminate-and-stay-resident programs to write utilities that can be integrated with Sidekick.

Thumbs-up for Sidekick

Members of Borland's new corporate advisory council who recently got a sneak preview of Sidekick Plus gave the product a thumbs-up.

"You can get a little histogram of what the weeks ahead look like and block out periods of time," said John Chihorek, manager of software engineering for Ford Aerospace & Communications Corp.'s aeroneutronic division in Newport Beach, Calif. He said built-in support for the Lotus/Intel/Microsoft Expanded Memory Specification will solve memory problems for him.

Another board member, Bill Dathniais, said he was impressed with Sidekick Plus even though he is an avowed Macintosh user. He said Sidekick is on most of the 100 machines in the Sacramento, Calif., office he used to head.

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IBM net upgrades untangle bottlenecks

BY ELISABETH HORWITT
CW STAFF

With the recently announced upgrades to its Token-Ring and PC networks, IBM is at long last addressing response-time bottlenecks that have frustrated some users and driven others into the arms of local-area network (LAN) companies like Novell, Inc. and 3Com Corp.

Promising network performance improvements over existing products of up to 70% in hardware and 480% overall, IBM's network introductions target three potential sources of network slowness: the adapter card bus, the server software and the Personal Computer LAN Program network software.

The last element, in particular, has been targeted by both users and analysts as a major source of network inefficiencies.

Last fall, Sunnyvale, Calif., company Network General Corp. used its Sniffer protocol analyzer to monitor the number and type of packets sent over a PC Network running IBM's PC LAN Program during a simple batch-file request and transfer between an IBM PC-based workstation and server.

According to Network General President Harry Saal, the entire transaction, which would have taken 0.4 seconds if the network were ideally efficient, took close to two seconds. Much of the delay resulted from unnecessary and repetitive communication between workstation and server.

Handshaking 'killer'

"Unnecessary handshaking is a big performance killer in the PC LAN Program," commented an Aetna Life and Casualty Co. technical services software specialist who asked not to be identified.

The specialist, whose division implemented the PC LAN program on an IBM Token-Ring, expressed a wish to see "an increase in speed that would result if less verification was needed to establish a session. There is plenty of room for improvement."

The corporate division of Aetna chose to implement Novell's Advanced Netware software on IBM Token-Ring networks, rather than IBM's own PC LAN Program Version 1.1, because "Novell's product is faster than PC LAN," said Li Hwa Ting, Aetna telecommunications manager.

IBM has improved network throughput with new capabilities offered in PC LAN Program Version 1.2, as well as in DOS and Netbios, said Robert Steen, IBM system manager for LANs.

Netbios has been rewritten in assembly language, takes up less random-access memory and is more efficient, he added.

The PC LAN Program Version 1.2, when used for basic workstation-to-server interactions like "open file," "get record" and "close file," can run up to four times faster than the previous Version 1.1, Steen claimed.

He added that "some changes have been made in the number of handshakings between server and workstation."

The new IBM Token-Ring Adapter/A and IBM PC Network Adapter II/A, which were designed to work with IBM's Personal System/2 Models 50, 60 and 80, incorporate the same 16K-byte buffer offered by the higher priced version of the existing Token-Ring Adapter/II, plus a bus that is 16 bits wide, as compared with the older cards' 8-bit bus.

Expanding the bus should make a difference in throughput during most types of transmission, Saal commented, "since all data packets, no matter what size, are bigger than eight bits."

The combination of the expanded bus and 16K-byte buffer increases performance to a degree that depends on the networking level, Steen noted. The higher the level at which communications occurs between workstation and server, the more opportunity for degradation.

Performance hike

In tests that IBM performed at the Netbios level, the new adapters demonstrated performance of 60% to 70% higher than the higher priced Adapter/II, Steen reported.

Li said that the corporate division at Aetna is currently experiencing bottlenecks primarily in "the I/O channels of PCs attached to the LAN," not in the bus or adapter cards. "But with the new PCs, a 16-bit bus on the adapter could be significant," she said.

Another IBM enhancement that could cut the time it takes for a workstation to obtain data from the server is a disk caching feature introduced with Microsoft Corp. MS-DOS 3.3, the Aetna technical services software specialist noted.

"But in order to make use of the caching feature on a network, you need applications that are written for DOS 3.3 and the LAN Program 1.2 — so it will be a while before users will see the difference," she said.

PS/2 picture

FROM PAGE 1

IBM clones, according to users and resellers.

"Hopefully, 100% of next year's [micro] purchases will be Personal System/2s," said Joseph Brophy, a senior vice-president with Travelers Insurance Co. in Hartford, Conn. Travelers will begin buying the Personal System/2 immediately: the Model 60 today and the Model 80 later. Brophy expects his purchases of IBM Personal Computer ATs to begin to drop off "once we get into" the new systems.

"What I have seen so far from corporate users is that most are elated that there is adherence to the established base of software, and most are interested to see what new capabilities the new machines provide," said Robert Nash, network support manager for Dardick Corp., formerly a five-store Computerland franchise based in Richmond, Va.

"The Personal System/2 is just a hot box," said Howard Bergman, data processing manager at Remco Maintenance Corp. in Cedarhurst, N.Y. As for OS/2, "I want to see it. There's nothing like touching and feeling," Bergman said.

However, the well of enthusiasm at present appears to be based on what users have read about the new computers and software. Despite initiating plans and strategies based around the products, most users said they will take a decidedly cautious approach to catching the IBM wave. Once they have seen IBM's promise in action, in particular OS/2, then many will rush forward with their plans.

Users want specifics

Users appeared to be most concerned with seamless data transfer and document interchange between the new IBM workstations and larger IBM systems, such as System/38s and mainframes. In particular, users said they want specifics about how the communications capabilities of OS/2, the new LAN Manager and the 3270 Workstation Program will actually work.

"We don't know what it means to us yet," said Curt Young, manager of systems and DP for Slawson Oil Co. in Wichita, Kan. "Does [the IBM announcement] give us additional connectivity hooking up the PCs to our System/38 computers?"

Dardick, which counts among its customers several Fortune 500 firms, has found its users are waiting to attend informational seminars before making any purchases. "[Users] want to see what kind of bang they're getting for the buck before they put any money down," Nash said.

Education is key to navigating the 200-plus IBM new product maze. "Everybody and his brother wants to get his eyeballs and his hands on the new machines," said Steve Malisewski, vice-president of marketing for Microage Computer Stores, Inc. in Tempe, Ariz. "But users are starved for information; it's the FUD [fear, uncertainty and doubt] factor."

Information campaign

Many resellers, inundated with requests for information from their corporate accounts, are scheduling executive information seminars.

"People are confused, so we are mounting a real information campaign," said Sam Missimer, director of marketing and advertising for Clancy Paul, Inc., an IBM dealer headquartered in Cranbury, N.J. More than 500 corporate users attended Clancy-Paul's rollout of the new IBM products.

"The confusion lies in two areas," Malisewski said. "What are the advantages of the new hardware and to what extent are they proprietary; and with the software, what real advantages will there be with the new system over the old?"

Cautious users are still buying IBM PC XT Model 286 and AT computers. "We will continue to see a demand for those products," Dardick's Nash said.

Two users predicted they'll buy few or no Personal System/2s next year. Instead, Robert Coyle, senior vice-president of operations at Sears Roebuck Acceptance Corp. in Wilmington, Del., said he would take advantage of the less expensive AT and wait for IBM to deliver the whole equation. Adair Waldenberg, director of administration at Northwestern University in Evanston, Ill., said she will wait for OS/2 before purchasing any of the new systems.

Noting IBM's staggered product delivery schedule for its new products, many users said they would wait for OS/2's delivery before shifting their micro installations over to IBM's new generation.

Microage's Malisewski predicted many corporate accounts will decide to support both IBM standards.

Clancy Paul's Missimer agreed. "The AT has a loyal following," he said. "It's like New Coke and Coke Classic — there's a market for both."

Users also indicated a slow but sure downward trend in purchases of IBM PC compatibles, especially given IBM's aggressive pricing of its XTs and ATs.

Staff members David Bright and Ed Scannell contributed to this report.

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SAA feast leaves consultants hungry

BY ELISABETH HORWITT
CW STAFF

RALEIGH, N.C. — IBM tantalized industry analysts last week with glimpses of how its distributed processing architectures will work together under the Systems Application Architecture (SAA) umbrella. However, many attendees said they still had no solid commitments from IBM on delivery dates for key products and enhancements.

IBM spokesmen reportedly filled in at least one major gap in the SAA picture during the meeting, stating clearly that an enhanced version of Extended Communication Facility (ECF) will be a keystone of the vendor's cooperative processing scheme.

A chart handed out during the conference depicted ECF on the top level of a distributed processing system, with Document Interchange Architecture, Systems Network Architecture Distributed Services (SNADS), Distributed Data Management (DDM) on the next level and peer-to-peer communications protocols LU6.2 and PU2.1 running underneath, reported Frank Dzubeck, president of Washington, D.C., consulting firm Communications Network Architects, Inc. The product group would form the communications foundation for IBM's future distributed relational data base management system, a project code-named RStar, he said.

Designing ECF

IBM gave no time frame for the release of redesigned ECF. ECF, which currently allows workstations to access virtual files and applications on hosts, "will still be around as an LU2 [3270 emulation-based] product for the older personal computers, noted John Carosella, a consultant at Network Strategies, Inc. in Fairfax, Va.

Attendees said they were able to garner further insight on which elements of IBM's distributed architecture are likely to play a pivotal role in the next few years.

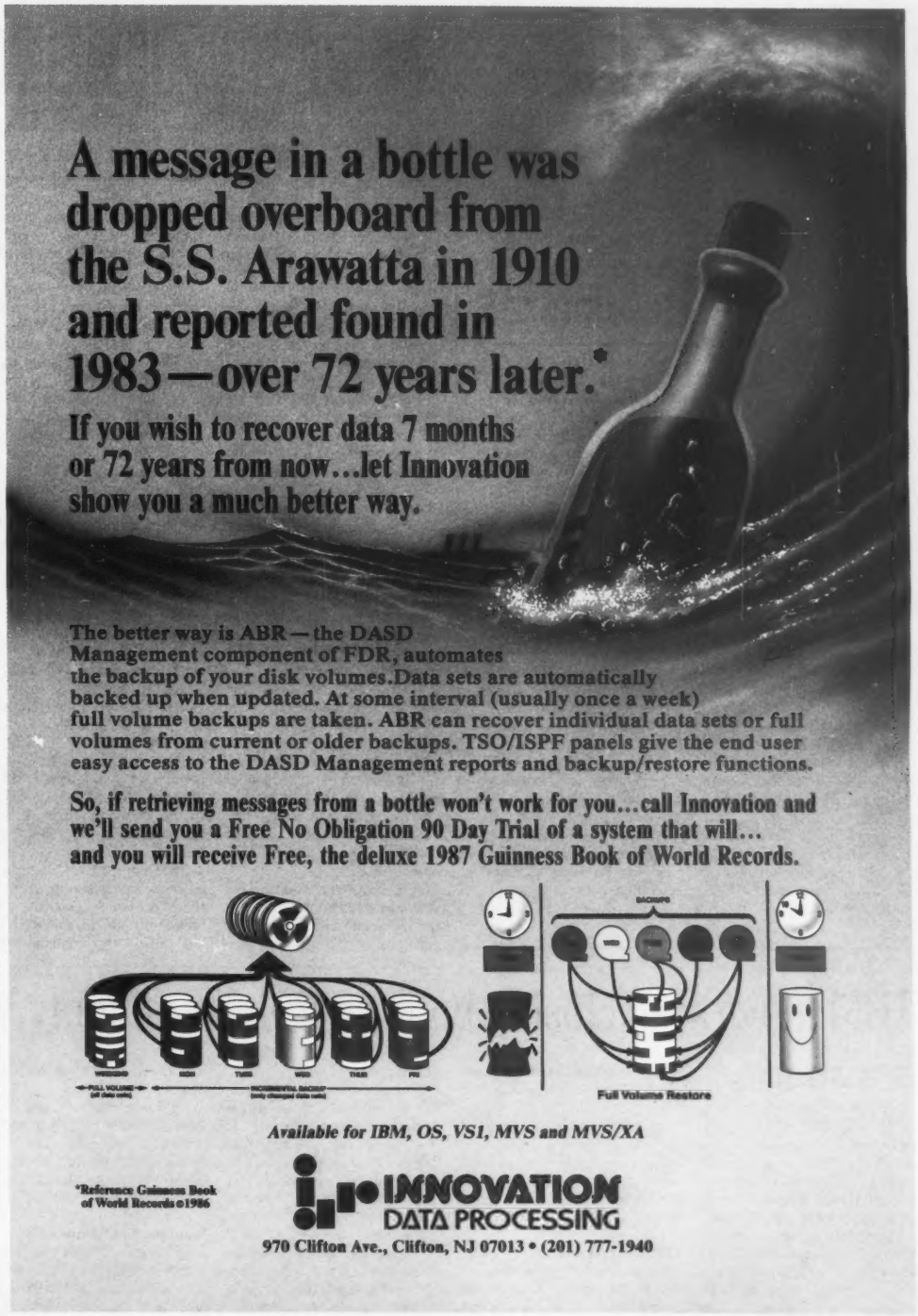
For example, LU6.2-based products such as the enhanced ECF and DDM stayed in the spotlight most of the day, while there was no mention of Netbios, the PC local-area network program, and Server Message Block, attendees reported.

IBM systems manager for LANs Robert Steen recently told *Computerworld* that IBM considers Token-Ring and PC Network to be "key networks on an establishmentwide basis," but, he indicated, IBM eventually expects most PC users to migrate to LU6.2-based communications software, which could run on either network.

IBM representatives also spoke offstage of LU6.2-based enhancements to existing products. "It was made clear to me that PU2.1 and LU6.2 will be implemented in VTAM," Network Strategies' Carosella reported. This will, in turn, allow 370 hosts to participate as nodes in Advanced Peer-to-Peer Networking, an LU6.2-based system that currently allows IBM Personal Computers to access System/36 hosts through intervening System/36 nodes.

Another LU6.2-based application, SNADS, will be "opened up to general system applications, as opposed to just office automation applications," reported John Pickens, senior communications architect at San Jose, Calif.-based Communications Solutions, Inc.

Many attendees faulted IBM for its refusal to name even general time frames for the commercial release of SAA products, however. "IBM was not specific about delivery dates," said Claire Fleig, senior research director for International Technology Group. "Now that IBM has said what it will do, we want to know how quickly we can get our hands on the products."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Users cheer CSA revisions

IBM's stumbling debut forgiven in wake of changed rules

BY STANLEY GIBSON
CW STAFF

IBM is brandishing a razor-sharp service program in a frontal assault on the independent maintenance market, and users have uniformly praised a revised discount plan.

"I can't find any problem with it. Adding the seven-days-per-week, 24-hour service is a great bonus," a West Coast user said of the revised Corporate Service Amendment (CSA), a component of the IBM Maintenance Agreement [CW, April 6]. "The other big plus, giving notice to cancel, is more than fair," he added.

"It puts CSA in a more positive light, particularly on mainframe savings. That kind of box is typically on 24-hour service," offered Larry Duntz, system manager for Beech Aircraft Corp. in Wichita, Kan. He said he is still looking at third-party providers but that they must come up with savings 10% to 15% greater than what IBM offers. Duntz added, "I'm not sure they can do that."

CSA was redone after a rollout that, by all accounts, went poorly.

"The initial CSA was a bomb," said Don Goodspeed, president of Computer Maintenance Consultant Ltd. in White Plains, N.Y. Users widely complained that their IBM representatives knew little or nothing about the plan, he said.

"Initially, they were, quite frankly, very disorganized in the administration of the CSA," said John Sensenich, director of the Sunguard Information Services Co. in Philadelphia, a disaster recovery service provider and large IBM user. Sensenich was so upset about the process that he took some equipment off of IBM maintenance, he said.

Several customers complained that IBM representives were not allowing them to see advance copies of a qualification test required to sign up for CSA, thus limiting their abilities to prepare for it. An IBM spokesman said users are now given copies of the test in advance.

Goodspeed said he urges his clients to sign up for the new CSA under the five-year option, rather than the three-year plan, because the discounts are greater and users can always cancel with six months' notice.

One user said he signed up a portion of his equipment under CSA, including all CPUs in his shop. He claimed he has some 3480s maintained by IBM and others serviced by Control Data Corp.

"I tell others to split their shop up," the user said. "The worst thing you can do is just sign with one vendor. Five or six years ago, I would have just gone with IBM for everything."

The enhanced CSA has prompted a third-party maintainer to return IBM's volley with a discount salvo of its own.

Sentinel Computer Services, Inc. in Oak Brook, Ill., will offer one- and three-year maintenance programs at prices 30% less than IBM's under CSA, according to Dennis Holzer, chief operating officer.

"IBM is trying to divert the customer's attention away from the real question — quality maintenance. They're trying to knock out competition by getting customers to the point where they have no alternative [to IBM]," Holzer claimed.

IBM may succeed in eliminating weaker players in the market, but aggressive independents can still thrive, according to Thomas McLaughlin, president of Technical Support Services, Inc., an Ossining, N.Y.-based servicer of terminals and automated teller machines.

'Having a heyday'

"IBM has made everybody more price-sensitive, and the customers are having a heyday," he said. "We've had to do some discounting, but as a rule, we're right there with the new prices. I think their action is a sign of good competition in the marketplace."

IBM's new long-term contract provisions pose more of a threat to third-party vendors than do the lower prices, according to D. R. MacNaughton, a maintenance market consultant in Franklin Lakes, N.J. "It may be several years before some user companies will be available to the third-party market, and that's a dismaying thing," he said.

IBM's revamp of CSA included other changes in addition to those previously reported and brought to light little-noticed details of CSA that continue from the agreement's original form.

Under the original CSA, customers were told that a single location had a single contract and that it would be for either one year or three. Now, a user can have several contracts for one location for one, three or five years. Also, an IBM spokesman said, one contract could in some cases cover several locations.

Rather than paying all the inspection fees up front, users may deduct inspection charges from the first 90 days of discounts received under the program.

If a third-party maintenance company holds an IBM maintenance agreement at a given location, that third party can subcontract some equipment maintenance to IBM under the CSA, an IBM spokesman said.

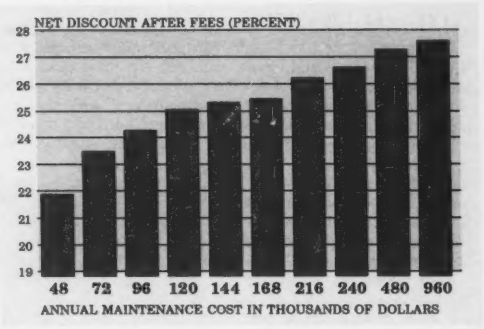
The 7% annual increase rate is cumulative and could add up to more than the original 21% limit after three years. "It could be slightly more," an IBM spokesman conceded, "But that's not the intention. We changed the contract to make budgeting easier for our customers."

In addition, the spokesman said that a 7% increase could be added in the first year and another 7% could be added in January of the following year, resulting in a greater than 14% increase in a span of 13 months.

CW Senior Editor Clinton Wilder contributed to this story.

Impact of CSA

The three-year network option in IBM's CSA provides big discounts for big users



INFORMATION PROVIDED BY COMPUTER MAINTENANCE CONSULTANT LTD.
CW CHART

Leads service charge

While IBM's Corporate Service Amendment (CSA) is staging a comeback that promises to be as successful as that of boxer Sugar Ray Leonard, the program is only one of several new or improved service offerings made by IBM this year, which include the following:

- In January, IBM announced that it would not charge customers for time spent in determining data center problems that were found to be in non-IBM equipment. Previously, IBM had charged extra for finding such problems.
- With little fanfare, on Feb. 4, the maintenance discounts for networks under CSA were increased by an average of 12%.
- On Feb. 17, IBM announced maintenance price cuts of 20% on the System/34 and 36 and reductions of 12% for the System/38. The price of maintenance for printers and displays that work with the minicomputers was slashed by 17%. In addition, users of these mid-range systems will receive two preventive-maintenance visits from IBM each year.
- On March 31, IBM radically overhauled the CSA, offering Sunday-through-Monday 24-hour service at no additional charge, offering a five-year agreement and softening termination penalties [CW, April 6].
- Beginning in January, to spur customers to flock under its service umbrella, IBM assigned its salesmen a quota of maintenance contracts, according to Donald Goodspeed, president of Computer Maintenance Consultant Ltd. in White Plains, N.Y., and a former IBM employee. An IBM spokesman declined to comment on terms of employee compensation.

STANLEY GIBSON

IBM move seen closing book on Rolm autonomy

BY JAMES A. MARTIN
CW STAFF

SANTA CLARA, Calif. — IBM last week wrote the final chapter for Rolm Corp. as an autonomous subsidiary with the naming of an IBM executive as president of Rolm, industry analysts said.

Ray AbuZayyad, a 25-year IBM veteran, is replacing Dennis Paboojian, who is to continue as a consultant, according to IBM. AbuZayyad was appointed president of IBM's General Products Division in 1985 and was named as an IBM vice-president last year.

Analysts said they believe the shift in management will position Rolm even further from its intended status as IBM's independent Silicon Valley telecommunications subsidiary.

Business as usual

IBM acquired 100% of Rolm in late 1984, stating at the time that Rolm would remain as is and "would continue doing exactly what it is doing now."

Paboojian, who was not available for comment, is said to be leaving for personal reasons. It was speculated, however, that Paboojian's diminished sales and marketing responsibilities at Rolm, along with IBM's recent management restructuring, prompted him to leave.

"The choice to leave was obviously his, but with reduced responsibilities, was there really a choice?," asked Greg Carlsted, a telecommunications analyst with Dataquest, Inc. in San Jose, Calif.

IBM recently combined Rolm's domestic sales, installation and service employees with IBM's Information Systems Group into a new sector presided over by IBM [CW, March 23].

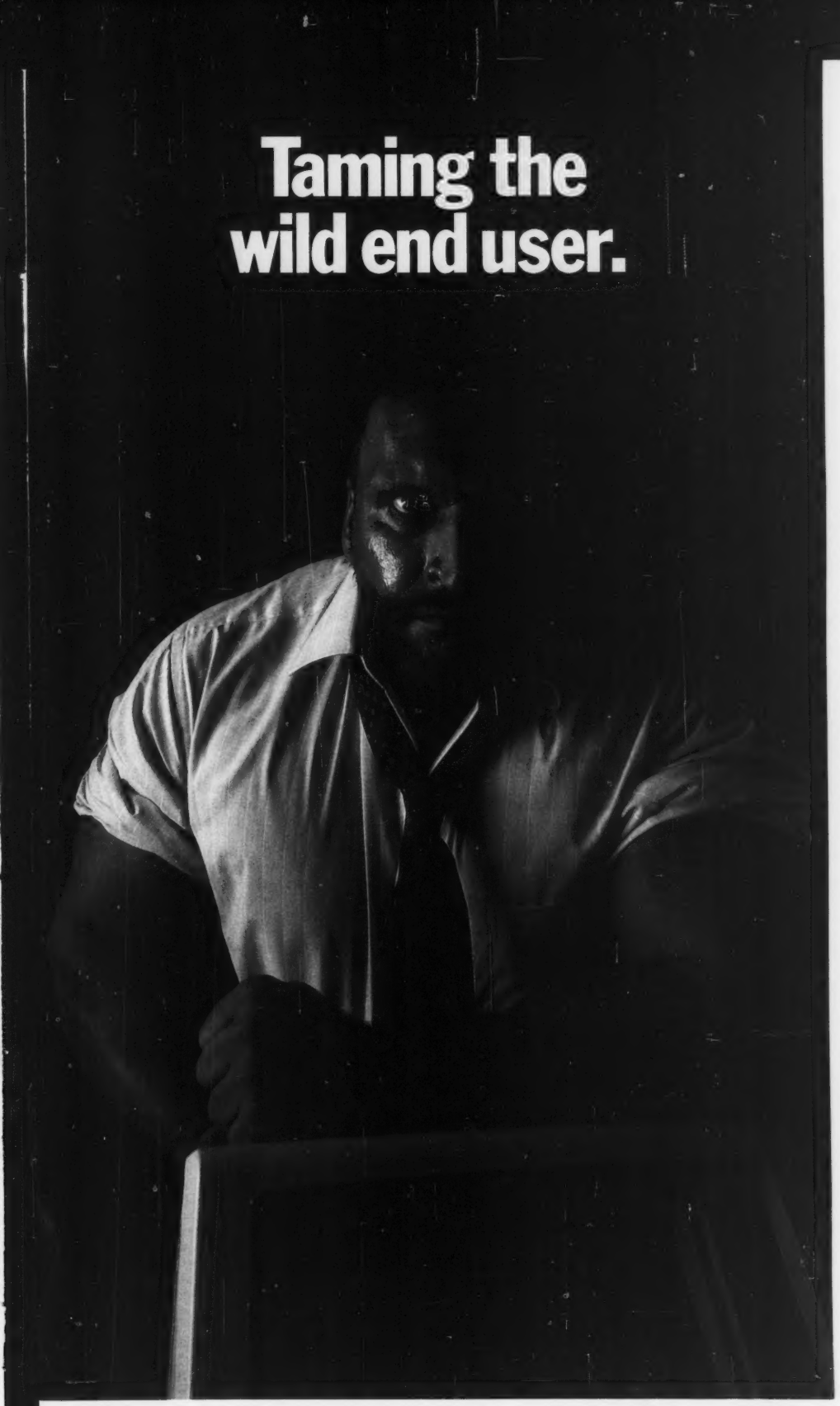
Floundering financially

IBM is seeking to gain more control over Rolm because its telecommunications subsidiary has floundered financially since the acquisition, analysts recently said. Estimates place Rolm's 1986 calendar year losses at anywhere from $50 million to $200 million.

Paboojian is not the first Rolm executive to leave since the acquisition. The telecommunications company's founder and chairman, Ken Oshman, departed last year, followed by Richard Moley, who was vice-president of marketing.

An IBM spokesman said that AbuZayyad's new position is "simply an executive change," and that Rolm continues to be a wholly owned subsidiary. She said the company would not comment on speculation.

Taming the wild end user.



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Canaan cuts output, staff

IBM competition forces firm to concentrate on OEM deals

BY CLINTON WILDER
CW STAFF

TRUMBULL, Conn. — Facing direct competition from the IBM 9370, Canaan Computer Corp. has laid off almost half its work force and announced last week that it will virtually abandon end-user and reseller sales to instead concentrate on OEM contracts.

The privately held maker of VM/CMS-based minicomputers said it now employs 50 workers. Canaan employed approximately 90 when it ramped up production for its DCS 6000 computer, which was introduced in January. Canaan has laid off most of its sales force and several manufacturing employees, according to Tamim Shipchandler, the firm's director of marketing and strategic planning.

Canaan has been operating in the red since its founding in 1981 and now appears to be directly threatened by the IBM 9370. Although Canaan originally hailed the announcement of the 9370 as "legitimizing" its own mid-range VM market, the 9370 also represents IBM's first competitive move against Canaan.

A source close to Canaan said the company, through its venture-capital backers, is seeking to be acquired by a larger systems vendor and is negotiating with Wang Laboratories, Inc. and Harris Corp.

"Acquisition is always a possibility," Shipchandler said. "It all depends on what opportunities our strategic allies see in the business." Shipchandler said Canaan will try to sell its systems to IBM-compatible terminal OEMs such as Telex Corp. and Lee Data Corp. as well as to leading minicomputer vendors with proprietary architectures such as Wang, Data General Corp. and Hewlett-Packard Co.

"These are companies that have lost business to IBM because their systems are not compatible with IBM mainframes," Shipchandler said. "And we need a presence in the Fortune 2,000 companies dominated by IBM mainframes."

The OEM sales cycle is generally much longer than the timetable for direct sales, but Shipchandler said Canaan received an undisclosed amount of new venture funding last week to pursue the OEM strategy.

"I think that acquiring Canaan would make sense for Wang," said Ron Sella, manager of marketing and sales of The Adesse Corp., a VM utilities software and services vendor based in Danbury, Conn. "They have the sales force in place, and they would be acquiring manufacturing facilities and a good box that would give them a bridge to the IBM world."

A Wang spokesman refused to confirm whether the Lowell, Mass.-based firm has begun negotiations with Canaan.

Canaan has an installed base of approximately 75 CPUs, including approximately 10 of the DCS 6000, which began shipping in late February.

Feeling the pinch

Designed to fill an IBM void, Canaan's departmental VM systems are now bracketed by the IBM 9370 family

Model	Performance*	Price
9370 Model 20	0.5	$31,000
Canaan 6100	0.5	$42,500
9370 Model 40	0.5	$65,000
Canaan 6300	0.5	$80,000
9370 Model 60	1.3	$93,000

*In millions of instructions per second

CW CHART: MITCHELL J. HAYES

Ashton-Tate lands SQL

BY DOUGLAS BARNEY
CW STAFF

TORRANCE, Calif. — Ashton-Tate last week gave to Wordtech Systems, Inc. an undisclosed amount of money and a promise not to sue Wordtech for copyright infringement and, in return, obtained Wordtech's SQL technology and key SQL developers, a Wordtech executive said. Wordtech markets Dbxl, an Ashton-Tate Dbase-compatible data base product.

Ashton-Tate has acknowledged plans to incorporate SQL in future versions of its Dbase data base product line. The hiring of the developers and acquisition of the SQL technology are expected to greatly help that effort.

The agreement was actually reached between Ashton-Tate and W & W, a Wordtech spin-off created to negotiate with Ashton-Tate. Ashton-Tate acknowledged agreements with both W & W and Wordtech aimed at acquiring SQL technology and the hiring of Harry K. T. Wong, a noted SQL expert.

"Our interest first and foremost was clearing the way for Dr. Wong to join Ashton-Tate, and Dr. Wong was under contractual agreement with Wordtech. As a result of that, we did enter into an agreement," said Lydia Dobyns, vice-president of marketing for Ashton-Tate.

Lotus sued

CONTINUED FROM PAGE 1

Inc. executives. Software Arts was the firm that introduced Visicalc, which is widely agreed to be the first electronic spreadsheet and which arguably set off the personal computer revolution in business.

By 1984, Software Arts employed 150 workers and had sold more than half a million copies of Visicalc. The stunning success of Lotus's 1-2-3 program, however, cut deeply into Viscalc's market, and Lotus acquired the bulk of the assets of Software Arts in June 1985.

The charges in the suit, filed last week in U.S. District Court in Boston, and totaling $100 million, include copyright infringement, breach of contract, unjust enrichment and misappropriation of confidential information and trade secrets. SAPC is suing Lotus for a period of infringement prior to Lotus's acquisition of Software Arts.

'Total concept'

The suit specifically cites 1-2-3 for copying "the organization, structure and sequences of Visicalc" as well as "the total concept, look and feel of Visicalc." The case promises to raise many immensely complex legal issues and problems but may help define the protectability of software copyrights.

Kapor was unavailable for comment pending review of the suit. Kapor resigned as a member of Lotus's board of directors in February.

Lotus attorneys were unavailable for comment as of press time, but the firm released a statement condemning the action. "So far as we can determine, this lawsuit was an ill-considered first strike by parties who have been preparing to release their own clone of Lotus 1-2-3," the statement said. Three of the SAPC shareholders formed Ontio Computer Products Corp., whose first product was scheduled to be a Lotus "work-alike." That product will not ship, pending the outcome of the lawsuit, according to Julian E. Lange, executive vice-president of SAPC and former president of Software Arts.

In January, Lotus itself filed suit against Paperback Software International and Mosaic Software, Inc. for copyright infringement, alleging that those firms copied the "look and feel," although not the actual source code, of 1-2-3.

While two information industry lawyers contacted last week agreed that software copyrights should be protected, software copyright law is still being defined through numerous ongoing cases.

Suits take narrow view

Lotus's suits against firms that "cloned" its software take the fairly narrow view that copyright infringement consists largely of "copying" a program almost wholesale.

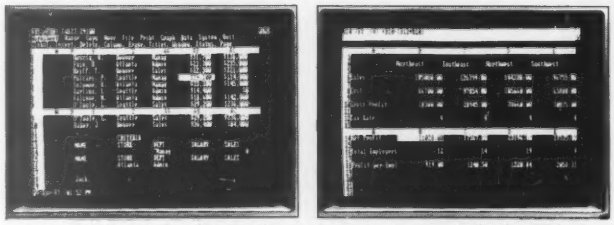
Meanwhile, SAPC appears to seek a broader definition of copyright infringement — one that may be more difficult to prove. "Nobody said there is a copyright on the concept of a spreadsheet," said Peter Marx, a Boston-based information industry lawyer.

The SAPC lawsuit argues that Kapor violated a 1981 nondisclosure agreement with what was then Software Arts. At the time, Kapor was working for Personal Software, Inc., the exclusive marketing agent for Visicalc. Personal Software was later renamed Visicorp.

Under the beta-test agreement signed by Kapor as a contractor in February 1981, Kapor was to "preserve and protect the confidential information and the materials as confidential to Software Arts, Inc. and will not disclose or disseminate . . . to any other person or entity, except as authorized by Software Arts."

In 1982, however, Lotus announced 1-2-3, and the product was then shipped in January 1983. "We feel we were wronged by Mitch and by Lotus," Lange stated.

The enforcement of nondisclosure agreements is a less murky issue than the protection of software copyrights. "They are enforceable. Whether it is $100 million or not, I don't know," Marx said. Cases of violations of nondisclosure agreements rest on whether an agreement was in fact violated, Marx added. "That would go into the history of what happened."



Lotus's 1-2-3 *(left) is said to infringe on industry pioneer application Visicalc.*

Unenforceable nondisclosures

According to Marx, however, there are exceptions in which nondisclosure agreements may not be enforceable — for example, if the information is already in the public domain or if the person already had the information.

In addition, nondisclosure agreements cannot be used to "prevent someone from using the skills of their profession," Marx said.

Of the five major SAPC shareholders, the two original Visicalc authors voted against suing Lotus. Dan Bricklin, who has been outspoken in his opposition to Lotus's copyright infringement suits against Paperback Software and Mosaic Software, opposed the SAPC suit, and cited the negative "social policy" implications of copyright infringement cases such as this.

Bricklin said he believes that such "look and feel" lawsuits stifle innovation in the still maturing software industry. "This is definitely not, 'Dan Bricklin sues Lotus,' " Bricklin said in a prepared statement.

Bricklin's former partner, Robert Frankston, now chief scientist at Lotus, also opposed the suit. "For a wide variety of reasons, I disagree with the filing of this lawsuit and, as a board member of SAPC, voted against it. Because SAPC elected to pursue this action, I have resigned from the SAPC board of directors," a Frankston statement said. Frankston and Bricklin, however, remained shareholders in SAPC as of press time.

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PBX vendors release smaller systems

Northern Telecom, AT&T releases for departments, small firms said to be full-function

BY DONNA RAIMONDI
CW STAFF

Two major vendors released private branch exchanges (PBX) last week for small and medium-size firms or large companies with decentralized offices.

Northern Telecom, Inc. released a 32- to 600-line Meridian SL-1ST integrated services network that is said to contain all of the features of the company's large PBXs, such as integrated voice and data. Meanwhile, AT&T released a version of its System 75 targeting the same market.

"Northern has made a real nice move to give full PBX functionality to the small user here," said Peter Bernstein of Probe Research, Inc. in Morristown, N.J. All data communications functionality that was available in the larger PBXs is now available for a reasonable price, he added.

One user of the previous small SL-1S system complained that he was not able to obtain voice-mail distribution and packet transport equipment features on his system, features he said Northern Telecom had promised when he bought the system. "SL-1S did not have some capabilities," a Northern Telecom spokesman admitted, but he said the new system will be full-featured from the start.

Data capabilities of the SL-1ST include computer-to-PBX interface that provides 24 channels per interface; IBM 3270 emulation, protocol conversion and coaxial elimination; and gateways to IBM's System/34, 36 and 38 and the CCITT X.25 standard.

Also featured are Digital Trunk Interface, a direct T1 interface; and the Remote Peripheral Equipment feature, the ability to put portions of the system in different locations, with each location retaining the same features as the overall system. The SL-1ST costs from $550 to $650 per station, including telephone sets, installation, warranty and labor.

The AT&T System 75 XE allows a user to grow from 40 to 100 stations within a cabinet, AT&T said. The AT&T system can be expanded to 600 users without a hardware upgrade and includes the full functionality of the larger System 75s. A 100-station System 75 XE, typically configured, will sell for $67,000, compared with $80,000 for a similarly configured earlier model. It will be available in July, according to AT&T.

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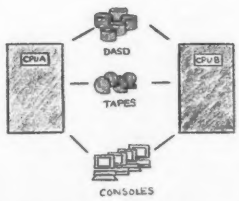

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80386 math glitch aired

BY DAVID BRIGHT
CW STAFF

Intel Corp. revealed late last week that some of its 80386 microprocessors have been found to incorrectly perform a 32-bit multiplication function. The company said it is prepared to replace some of its 80386 chips in the field.

Personal computers running 16-bit Microsoft Corp. PC-DOS programs are not affected by the problem, Intel said.

Intel said it uncovered the problem during extensive testing of the chip. "The basic problem has to do with 32-bit multiplies," a company spokeswoman said. "There's something like four quintillion combinations of [possible] numbers, and in going through some testing, we found that sometimes you get a wrong number. So it's something that's going to affect 32-bit software, but we don't know to what extent. It won't affect 16-bit software at all."

Intel shipped some 90,000 of the 80386 chips in 1986 and plans to ship at least 500,000 more this year, according to recent company estimates.

The company did not specify how many of the chips will need to be replaced, but said it is notifying its customers and extending its replacement warranty from one year to two years.

Most of the 80386-based systems shipped to date have been Compaq Computer Corp. Deskpro 386 systems, which numbered approximately 20,000 units in 1986, estimated International Data Corp., a Framingham, Mass.-based market research firm.

A Compaq spokesman said that since very little 32-bit software is currently available, there would be no immediate impact on Deskpro 386 users.

The Compaq spokesman added that Compaq will announce this week a complete program to replace the chips where necessary.

Intel reported operating profits of $8.5 million, compared with an operating loss of $36.5 million one year earlier. Net income, which included $17 million from the sale of a building, was $25.5 million, or 21 cents per share.

In the first quarter of 1985, Intel reported a net loss of $22.2 million, or 19 cents per share. First quarter revenue rose 41% to $394.5 million.

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□ REASON #5: HIGH-SPEED RELATIONAL SORT FACILITY OPTIMIZES DATA AGGREGATION

Ad hoc relational queries frequently request that data be grouped, ordered or otherwise sorted. V5's internal sort facility performs aggregation and elimination early, faster than previously thought possible.

□ REASON #6: EFFICIENT ROW-LEVEL LOCKING OPTIMIZES TRANSACTION THRUPUT.

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Protected mode tapped by Oracle

BY DOUGLAS BARNEY
CW STAFF

BELMONT, Calif. — Oracle Corp. is scheduled this week to formally unveil Professional Oracle, a full implementation of the firm's mainframe data base that uses the protected mode of the Intel Corp. 80286 and 80386 processors.

While other data base vendors, including Ansa Software Co. and Fox Software, Inc. (see story below) are seeking or using third-party products to break the so-called 640K-byte personal computer MS-DOS memory barrier, Oracle developed its own solution.

"The product lives and executes in protected mode. It provides more space for applications than any other micro data base product," says Eugene Shklar, director of marketing for Oracle's PC line.

Also this week, Oracle is set to formally announce the $2,495 Lanserver Oracle, to be available in the fourth quarter, and the $695 Networkstation Oracle, scheduled for availability in the second quarter. Lanserver Oracle, which runs on 80286- and 80386-based micros, mimics the functionality of minicomputer and mainframe server environments. Networkstation Oracle lets PCs using a variety of network and communications protocols access multiple servers.

Professional Oracle will sell for $1,295 and is scheduled to be available in the second quarter.

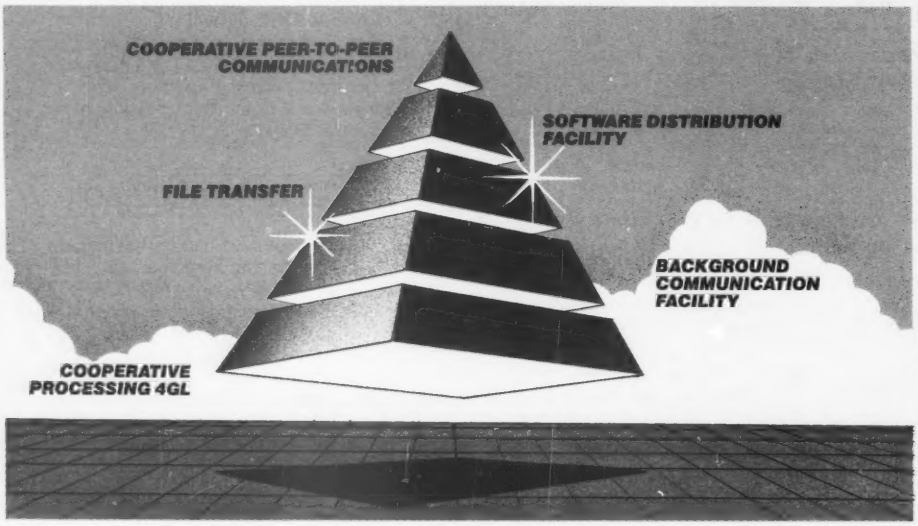
Oracle began work on Professional Oracle one year ago, when it decided not to wait for a protected-mode operating system from Microsoft Corp. That operating system, now called OS/2, is scheduled to ship in the first quarter of 1988.

"The obvious choice was, 'Let's wait for [OS/2].' But we weren't sure that Microsoft could stick to its schedule," says Peter Tierney, vice-president of marketing for Oracle. "We couldn't wait for Microsoft, and neither could our customers." Oracle plans, however, to develop products for OS/2, Tierney says.

Professional Oracle has already shipped to 25 to 30 beta-test sites. One such site is Monsanto Chemical Co. in St. Louis, which is interested in Professional Oracle as part of an overall distributed data base strategy.

Monsanto's main interest in Oracle lies in its portability. "It is 100% portable. We can have applications development work occur on PCs and move those applications to other systems," says Leonard M. Alper, data base specialist for Monsanto Chemical.

Monsanto has been testing the product on an IBM Personal Computer AT and says the programs appear to run well. The only problem the firm has encountered is running with Digital Equipment Corp.'s Decnet DOS. "We haven't determined if the reason for the conflict is with the older version of Decnet or with Oracle," says David C. Ficken, a relational systems specialist for Monsanto Chemical.



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Fox data base handles roomy 386 systems

BY DOUGLAS BARNEY
CW STAFF

PERRYSBURG, Ohio — Fox Software, Inc. recently disclosed plans to introduce a version of its Foxbase microcomputer data base software that the firm says will take advantage of the large address space of Intel Corp. 80386-based machines.

The product, which will reportedly run under the IBM PC-DOS and Microsoft Corp. MS-DOS Version 3 family, will use Phar Lap Software, Inc.'s DOS Extender to take advantage of the power of the 80386. "The people at Phar Lap were the only ones that provided a DOS-compatible means of fully accessing the 80386 linear address space," said William J. Ferguson, vice-president of product development at Fox Software. The Foxbase product reportedly will only run on 80386-based machines and is slated to ship in June. A price has not been set.

According to Ferguson, the conversion under the DOS Extender was a relatively simple procedure, taking approximately one month. "We spent a lot of time working against the segment-register architecture. As we strip that out and use added memory, it gives us some elbow room," Ferguson said. "A sort of megabyte data base can happen in memory. It is faster than a random-access memory [RAM] disk and faster than a hard disk."

Users will not have to purchase the full DOS Extender product from Phar Lap in order to run the Fox data base. "We are working with Phar Lap to bind DOS Extender in it through a runtime license," Ferguson said.

There are limitations, however, to the use of the product. "We may have to tell our users that they can't use their RAM-resident utilities," Ferguson said. The product also will not work with Novell, Inc.'s Advanced Netware.

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3317-8715

Honeywell Bull starts with DPS 7000

BY JAMES CONNOLLY
CW STAFF

BILLERICA, Mass. — The first product announcement by the recently formed Honeywell Bull, Inc. last week focused on replacement of the firm's 6-year-old DPS 7 family with processors aimed at the IBM 9370 departmental processors.

The DPS 7000 is intended to expand use of the DPS 7's GCOS 7 operating system in the U.S., where sales of the DPS 7 and the older Level 64 lagged behind international sales.

Like the DPS 7, the five DPS 7000 models were built at the French plants of Honeywell Bull's controlling partner, Compagnie des Machines Bull.

"We will clearly put more emphasis on the DPS 7, and now the DPS 7000, than we ever did before. This new company is going to be aggressive, and we believe this product is going to be aggressive," said Maurice J. Gervais, director of DPS 7 operations for Honeywell Bull.

Gervais said a new release of GCOS 7 was designed for the DPS 7000 but runs on the DPS 7 and that programs and peripherals used with the DPS 7 can be moved to the new systems.

Honeywell Bull claimed a price/performance edge over the 9370, particularly in transaction processing. DPS 7000 prices range from $127,000 to $1.2 million. Transaction rates reportedly range from 9,000 to 52,000 transaction/sec. on the TP/1 benchmark.

U.S. sales of the DPS 7 have suffered in part because Honeywell, Inc. salesmen were oriented toward minicomputers or mainframes and not superminicomputers, said Don Bellomy, editor of "The Computer Industry Report," published by International Data Corp., a Framingham, Mass., market research firm.

"There seems to be a change in direction with the strategic mapping now being done out of Paris," Bellomy said. "The message they are trying to give is that the DPS 7 line will be a strategic offering of the new company."

Honeywell Bull said it expects to build on the DPS 7 base by targeting vertical markets, including health care and manufacturing, and by emphasizing the DPS 7000 in its own company.

"They plan to continue to develop niche markets and focus their efforts on the niche markets that they know already and where they have expertise," said Chuck White, program director of industry services for the Gartner Group, Inc., a Stamford, Conn., market research firm.

The vendor announced the Patient Care Management System, which is a DPS 7000 package designed for tasks such as hospital patient admission and discharge, medication administration and care planning. When paired with a mid-range DPS 7000, the Patient Care Management System typically costs $550,000 to $650,000 for a 200- to 300-bed hospital.

DPS 7000

Typical configurations	MIPS[1]	Transactions per sec.[2]	Memory (bytes)	Disk Storage (bytes)	Operating System Price	Price[3]
Model 10	0.65	9,000	4M	700M	$25,500	$127,000
Model 20	0.86	12,000	8M	1.5G	$25,500	$183,000
Model 30	1.6	22,000	8M	3G	$47,700	$324,000
Model 40	2.8	30,000	8M	4G	$47,700	$398,000
Model 50	3.8	52,000	16M	4G	$66,600	$551,000

[1] Millions of instructions per second, based on CW estimates.
[2] Honeywell Bull claims based on TP1 benchmark.
[3] Includes CPU, disk storage, tape drives, printers and front-end processor.

CW CHART

Revamped System/7

Honeywell Bull also enhanced its Honeywell Bull Manufacturing System/7, which coordinates the manufacturing process from the ordering of raw materials through production. The package now includes a Host Application Interface for direct monitoring of shop-floor activities.

Ann Courtwright, director of research for the Boston-based market research firm The Yankee Group, said Honeywell Bull has a chance to impact the growing manufacturing resource planning market.

"Honeywell had a traditional base in manufacturing in the first place, and the fact that they are now linked up with a dynamic French company is important," she said.

White observed that the DPS 7000 announcement is part of the effort of Honeywell Bull Chairman Jacques Stern and Chief Executive Officer Jerome J. Meyer to present a unified face for Honeywell Bull, which was

Continued on page 14

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Students review lesson content with workbook exercises, and each module builds practical programming experience with sample programs provided on the C Video Workdisk. The package includes the acclaimed text "Learning to Program in C" by Dr. Thomas Plum, international authority on C and technical advisor to Hands On Learning.

The Secret: Roeder and his company have helped thousands to master computers and software. The secret of their system is its focus on people: using human experience to teach technical concepts. "It's like learning by osmosis" says one student, "I had no idea I was getting so much. When the tapes ended, I just started programming."

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Data General welcomes systems integrator role

BY JEAN S. BOZMAN
CW STAFF

CHICAGO — Hoping to increase market share, Data General Corp. officials last week came calling on MIS executives here with a message but without any new products.

DG executives, including Chairman and President Edson D. de Castro, brought the message that the company is willing and eager to be the systems integrator for large shops.

The perception in the MIS community that the troubled superminicomputer maker is a provider of proprietary systems must change if it is to grow as a systems supplier, the executives said.

DG sales plateaued about 18 months ago, prompting a series of layoffs, and show no signs of breaking out right now. Last year, DG generated $1.268 billion in sales, hardly more than the $1.239 billion it sold in 1985.

But investment in new products, many of which will debut later this year, continues. "DG's margins have essentially been break-even for the last 1½ years," de Castro told the assembled consultants, reporters and customers. "But we felt it was important to make investments in the short-term to develop new products." DG invests about 10% of its $1.2 billion in revenue in research and development.

The only product news the company provided was announcement of a joint development agreement with Relational Technology, Inc. to make that company's Ingres relational data base management system and associated products available on DG equipment.

According to J. David Lyons, DG's vice-president of group marketing, the company has targeted several key vertical markets for growth: banking, brokerage, computer-integrated manufacturing, insurance, health, travel and government.

Besides packaging systems with software from independent software vendors, DG has also forged relationships with major end users as software suppliers.

Among these end-user suppliers are General Electric Co., which wrote a manufacturing system; Citicorp, which provided a trading services package; and Baxter Travenol Laboratories, Inc., which wrote a medical software package.

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The world's fastest digital integrated circuit, a gallium arsenide (GaAs) chip that runs at a clock rate of 18 gigahertz (GHz), or 18 billion cycles per second has been built by Hughes Aircraft Company scientists. The ultra high-speed circuit operates as a divide-by-two frequency counter and is five times faster than currently available GaAs integrated circuits and ten times faster than commercial silicon circuits. Fastest frequency reported previously for static frequency dividers was 13 GHz for a laboratory device requiring cryogenic temperatures; the Hughes circuit operates at room temperature. Operation of digital circuits at multi-GHz frequencies opens new areas of digital communications and signal processing, promising better noise immunity, a wider range of functions, and less complexity than their analog counterparts. Applications are forseen in fiber optic communication links, supercomputers, advanced radars, and satellite communications.

Ships at sea will be able to determine their positions via satellite. A maritime navigational system is one of the new services proposed for the existing system of Marisat satellites, launched in 1976. For the past 4 years, the trio of Marisats has been providing telecommunications services for the International Maritime Satellite Organization (INMARSAT), a cooperative of 47 countries that operate a worldwide system for maritime communications. Leases with INMARSAT have been renewed for three years by Comsat General Corporation, owner of the satellites, enabling the Hughes-built satellites to continue providing communications services to the military, shipping, and offshore industries.

Infantry squads can maintain communications under polar conditions thanks to the Hughes AN/PRC-104 manpack radio, now the standard U.S. military field-communications system. It weighs only 14 pounds yet its lithium batteries provide enough power for voice communications at ranges of more than 1000 miles. It operates reliably at temperatures well below -50 degrees centigrade and can be used in total darkness by operators wearing the thickest mittens. Designed to meet a military specification of 2500 hours between failures, its actual record in the field far exceeds that requirement with an average of 4000 hours of fault-free operation.

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Honeywell

FROM PAGE 13

formed by Bull, Honeywell and NEC Corp. Acknowledging that Honeywell Bull still offers too many operating systems, White said, "Overall, we cast a favorable eye on the efforts of Stern and Meyer. In a certain way, they have it easier than Unisys Corp., [the merger of Burroughs Corp. and Sperry Corp.], in that these three companies had a common product set, the same hardware platforms."

The DPS 7000, supporting up to 600 terminals, is a 32-bit system with five models built around 10 CMOS processors. GCOS 7 Version 3 features additional support for personal computers accessing Honeywell Bull's Integrated Data Store/II network data base management system. Version 3 also supports Oracle Corp.'s Oracle relational DBMS and Cincom Systems, Inc.'s Mantis.

Honeywell Bull also followed the lead of IBM and Digital Equipment Corp. by offering tiered pricing for some mid-range software offerings. For example, GCOS 7 licenses for the DPS 7000 range from $25,500 for the Models 10 and 20 to $66,600 for the Model 50. The DPS 7000 is now being installed in Europe and is scheduled to be available in the U.S. in August.

Few willing to take VAX plunge

CDLA says IBM systems far more attractive to third-party dealers

BY JEAN S. BOZMAN
CW STAFF

Few third-party equipment dealers are willing to jump into the currently soaring market for Digital Equipment Corp. VAX systems, even though growth in the IBM mainframe market has slowed to a crawl, according to leasing executives.

Despite an apparent opportunity to profit from the growing demand for DEC computers, the vast majority of third-party companies prefer to deal in IBM large and medium-scale systems, according to members of the Computer Dealers and Lessors Association (CDLA). Sometimes, the only reason a CDLA member will acquire DEC products is to satisfy the requirements of a large customer who also needs IBM computers.

CDLA members confirmed this reluctance. "We get close to IBM because we have to," said Don Butler, executive vice-president of Transcapital Corp. in Norwalk, Conn. "They make the market for us."

'Best game around'

During the CDLA's spring meeting this month, Daniel Mandresh, a vice-president at Merrill Lynch & Co.'s Capital Markets division in New York, told lessors, "Obviously, you can move to other equipment, but IBM's been the best game around, and it's been good to you."

To a certain extent, the CDLA members' reluctance can be traced to the way in which the CDLA evolved, said Rick Forsythe, chairman of the CDLA's IBM Relations Committee.

"Initially, IBM was the only company that would assure us they would maintain used machines at a published price," Forsythe explained.

Dabbling with DEC

Yet a few companies, notably Comdisco, Inc. and The Neptune Group, Inc., have begun to take positions in DEC machines. "We're dabbling in VAXs," said Neptune President Stephen Chaleff.

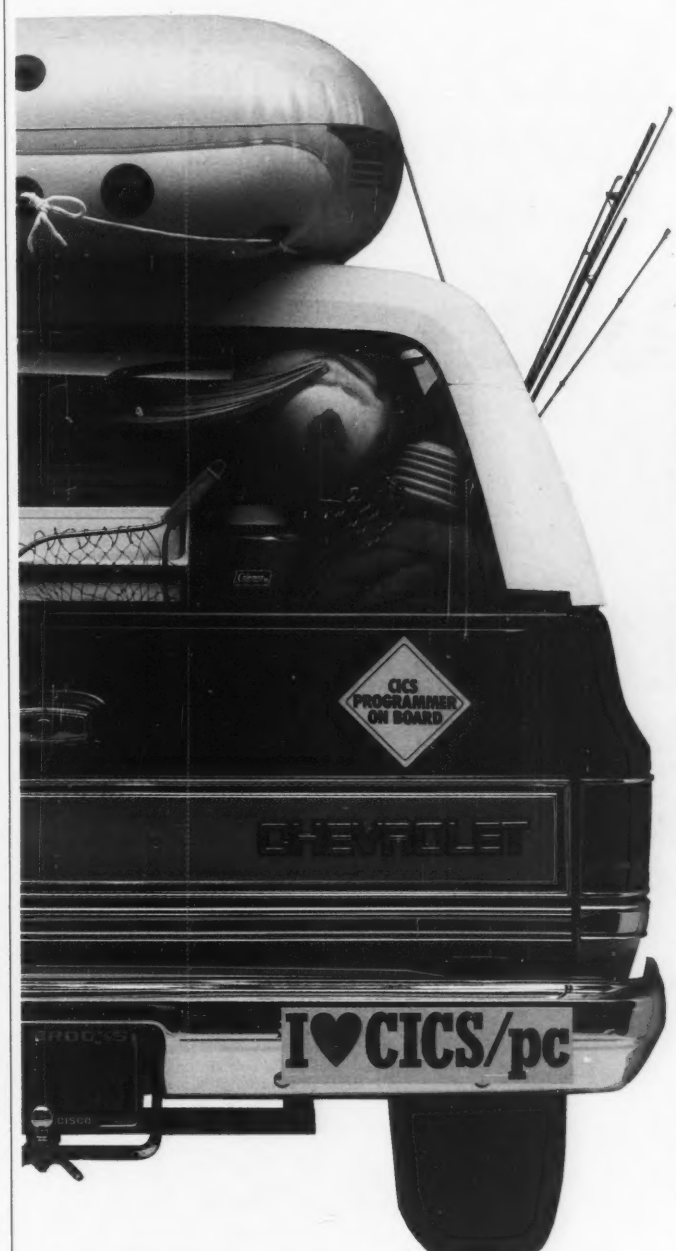
But Pedro Wasmer, a Neptune senior vice-president, said DEC's own position in the leasing and used-computer marketplace has clouded the issue. "We begin to question DEC's reluctance to commit to software support and to maintenance support," he stated.

Another concern is that the market in DEC peripherals and other products besides CPUs is not as well-defined as that of IBM peripheral products. "We need a reliable price list for DEC peripherals, and we don't have one yet," said Anthony Graffia, president of Hartford Computer Group, Inc. in Inverness, Ill.

DEC computers would be a good complement to IBM products for the CDLA members, said Frank Gens, vice-president for technology management research at International Data Corp. (IDC). Large systems growth in general is less than 2% a year, Gens said, while demand for intermediate systems and personal computers is growing at rates of 10% to 15%.

A December 1986 IDC survey showed that demand for mainframes is very low. Last June, 80% of the MIS shops surveyed said they felt they had enough capacity. In December, however, about 60% said they felt their capacity was sufficient.

Intermediate systems growth is also taking place on the IBM side, which is expected to affect shipments of the newly released IBM 9370. "As Deep Throat told the Watergate reporter, 'Follow the money,' " Gens said. "And if I were in the leasing business, I would really be looking at IBM 9370s, IBM 3380 disk drives and System/36s and 38s. But I still think that looking at DEC is a wise decision."



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AMD preps ISDN control chip

BY ALAN ALPER
CW STAFF

NEW YORK — Advanced Micro Devices, Inc. (AMD) said last week it is developing a single-chip controller that supports a multitude of communications protocols for equipment designed to operate within the Integrated Services Digital Network (ISDN).

Integrated Data Protocol Controller (IDPC), which will not be available until year's end, is said to support AT&T's Digital Multiplexed Interface (DMI), a set of specifications for simultaneous connection of multiple terminals through a digital private branch exchange to host computers over twisted-pair wiring. In addition, the chip will reportedly support other bit-oriented protocols, the Sunnyvale, Calif., firm said.

IDPC should spur development of ISDN-compatible equipment by hardware vendors and software developers, noted John East, group vice-president of AMD's Logic Businesses.

The single chip would replace a full circuit board of components, cutting hardware development costs in half, AMD said.

Moreover, IDPC is said to simplify software development because the chip incorporates communication management functions and interfaces that previously had to be coded by developers.

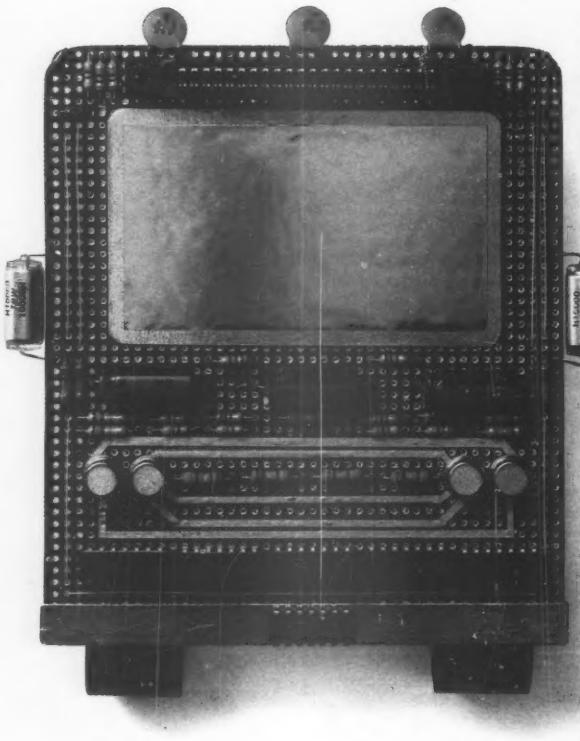
IDPC, East said, would remove two major obstacles to ISDN acceptance by equipment makers. It should foster the adoption of communications standards and provide lower cost circuitry to develop equipment to replace the analog devices used on the current phone network, he added.

"Rapidly falling prices will do the same thing for ISDN-compatible devices as it did for PCs and the consumer electronics businesses," East said.

The semiconductor maker has worked closely with AT&T to ensure that IDPC conforms to standard communciations protocols, East said.

As part of an existing licensing agreement, AT&T provided AMD with DMI specifications and will jointly test and certify IDPC's operation and other protocols in the ISDN environment, the firms noted.

The right IBM channel connections will get you on the bus faster.



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Our 8900A Channel Interface is based on a Q-bus™ design. Under the control of your device's DEC CPU, the 8900A is a fully functional control unit. It responds to any or all of the 256 IBM subchannel addresses with data transfer rates on the channel of up to 1.2 megabytes per second. The 8900A will run multiple control unit emulations simultaneously, and serve multiple downline devices.

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KMW SYSTEMS CORPORATION

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PC scam uncovered

BY ALAN J. RYAN
CW STAFF

MIAMI — A Florida businessman has been indicted by a federal grand jury for allegedly selling more than 500 personal computers to Cuba through a government-run Cuban company in Panama, according to U.S. Customs Service officials.

Gary Emert was arrested on April 3 and charged with making 19 shipments of IBM Personal Computers and PC ATs, Tallgrass Technologies ATs and some AT&T systems through a front company in Panama, according to Patrick O'Brien, a customs special agent in charge of southern Florida.

Through his alleged actions, Emert, a computer salesman for Hi-Tech Industries, Inc. in Fort Lauderdale, Fla., violated a U.S. trade embargo against Cuba that has been in place since 1962, O'Brien said.

Also indicted were Venezuelan national Remo Geovanni DiBartolomeo, who is said to have acted as a go-between for Emert and Roberto Roque, a Cuban official who allegedly runs the front company in Panama. DiBartolomeo was arrested on March 3 as he entered the U.S.

More indictments and arrests are expected in the case, the customs agent added. He would not say whether he believes there were shipments other than those specified in the indictment.

COMPUTERWORLD

Annual Microcomputer Awards

Fill out this ballot to qualify for a free software package

Computerworld will recognize the best microcomputer products introduced or significantly enhanced in 1986 in an awards presentation at Comdex/Spring in Atlanta this June. The winners will be chosen by our subscribers. Please take a few minutes to vote for the outstanding products in the categories below. You may also write in a vote for any product not listed.

Everyone who sends in a ballot will be eligible to receive a free copy of Q&A, the popular new artificial intelligence-based word processer and file manager from Symantec Corp. The winner will be chosen at random.

All entries must be received by April 24.

Please vote only for products introduced or significantly enhanced since January 1, 1986. Send your ballot to:

Research Department
CW Communications, Inc.
375 Cochituate Road
P.O. Box 9171
Framingham, MA 01701

Best Microcomputer

5- 1 ☐ AT&T 6310, AT&T
2 ☐ Deskpro '286 (12 MHz version), *Compaq Computer Corp.*
3 ☐ Deskpro '386, *Compaq Computer Corp.*
4 ☐ Personal System/2 Model 50, *IBM*
5 ☐ Kaypro PC, *Kaypro Corp.*
6 ☐ Macintosh Plus, *Apple Computer, Inc.*
7 ☐ Macintosh SE, *Apple Computer, Inc.*
8 ☐ PC's Limited '386, *PC's Limited*
9 ☐ Premium '286, *AST Research, Inc.*
0 ☐ Tandy 3000, *Tandy Corp.*
x ☐ Vaxmate, *Digital Equipment Corp.*
y ☐ Other _____

Best Laptop/Portable Computer

6- 1 ☐ DG/One Model 2, *Data General Corp.*
2 ☐ Gridcase 2, *Grid System Corp.*
3 ☐ Multispeed, *NEC Corp.*
4 ☐ PC Convertible, *IBM*
5 ☐ Portable II, *Compaq Computer Corp.*
6 ☐ Portable III, *Compaq Computer Corp.*
7 ☐ Snap 1+1, *Quadram Corp.*
8 ☐ Spark, *Quadram Corp.*
9 ☐ Toshiba 3100, *Toshiba America, Inc.*
0 ☐ Zenith Z-181, *Zenith Data Systems*
x ☐ Other _____

Best New Laser Printer

7- 1 ☐ Big Kiss, *QMS, Inc.*
2 ☐ Genicom 5010, *Genicom Corp.*
3 ☐ Laserjet Series II, *Hewlett-Packard Co.*
4 ☐ Laserpro Express, *Office Automation Systems, Inc.*
5 ☐ Laserwriter Plus, *Apple Computer, Inc.*
6 ☐ LP300, *Cordata*
7 ☐ Omnilaser, *Texas Instruments, Inc.*
8 ☐ Pagelaser, *Toshiba America, Inc.*
9 ☐ Quad Laser LS 1100, *Quadram Corp.*
0 ☐ Qume Laser, *Qume Corp.*
x ☐ Turbolaser, *AST Research, Inc.*
y ☐ 4045 Laser Printer, *Xerox Corp.*
8- 1 ☐ Other _____

Best Local-Area Network Product

9- 1 ☐ Appleshare, *Apple Computer, Inc.*
2 ☐ Carbon Copy, *Meridian Technology, Inc.*
3 ☐ Higgins Exchange, *Konectic Systems, Inc.*
4 ☐ Irmalan, *Digital Communications Associates, Inc.*
5 ☐ Message Handling System, *Novell, Inc.*
6 ☐ Network Courier, *Consumers Software, Inc.*
7 ☐ PC Netview, *IBM*
8 ☐ Starlan, *AT&T*
9 ☐ System Fault Tolerance, *Novell, Inc.*
0 ☐ The Sniffer, *Network General Corp.*
x ☐ Token-Ring, *IBM*
y ☐ Token-Ring Network Manager, *IBM*
10-1 ☐ TOPs, *Centram Systems*
2 ☐ 3+, *3Com Corp.*
3 ☐ Other _____

Most Useful Micro-Mainframe Link Product

11-1 ☐ APPC/PC, *IBM*
2 ☐ Answer/DB, *Sterling Software, Inc.*
3 ☐ Application Program Interface, *Attachmate Corp.*
4 ☐ Extended Communication Facility, *IBM*
5 ☐ Gateway PC, *SCA Products and Services, Inc.*
6 ☐ Ideacom 5251, *Ideassociates, Inc.*
7 ☐ Irmalan, *Digital Communications Associates, Inc.*
8 ☐ Macmainframe, *Avatar Technologies, Inc.*
9 ☐ Multiplex, *Network Innovations*
0 ☐ PCOX/Gateway-16, *CXI, Inc.*
x ☐ Quad3270 Gateway, *Quadram Corp.*
y ☐ Relay Gold 2.0, *VM Personal Computing, Inc.*
12-1 ☐ Remote Access Facility 2.0, *Datability Software Systems, Inc.*
2 ☐ Server Requester Programming Interface, *IBM*
3 ☐ Smarterm 240, *Persoft, Inc.*
4 ☐ Super-Link, *Multisoft, Inc.*
5 ☐ Tempus-Link, *Micro Tempus, Inc.*
6 ☐ The Application Connection, *Lotus Development Corp.*
7 ☐ VAX/VMS Services for MS-DOS, *Digital Equipment Corp.*
8 ☐ 10-SNA/10-BSC, *Fox Research, Inc.*
9 ☐ 3270 Emulation Program 3.0, *IBM*
0 ☐ 3270-Plus, *Communications Solutions, Inc.*
x ☐ Other _____

Best PC Expansion Board

13-1 ☐ Aboveboard/AT, *Intel Corp.*
2 ☐ Advantage Premium, *AST Research, Inc.*
3 ☐ All Aboard, *Ideassociates, Inc.*
4 ☐ Autoswitch EGA, *Paradise Systems, Inc.*
5 ☐ Dream Board, *Univation*
6 ☐ EMS+, *Quadram Corp.*
7 ☐ Expanded Memory Adapter, *IBM*
8 ☐ Hard Card 20MB, *Plus Development Corp.*
9 ☐ Hercules Graphics Card Plus, *Hercules Computer Technology, Inc.*
0 ☐ Hercules Incolor Card, *Hercules Computer Technology, Inc.*
14-1 ☐ Inboard 386/AT, *Intel Corp.*
2 ☐ Mach 10, *Microsoft Corp.*
3 ☐ Mac86, *AST Research, Inc.*
4 ☐ Quad386XT, *Quadram Corp.*
5 ☐ QuadEGA+, *Quadram Corp.*
6 ☐ Turbo EGA, *Orchid Technology, Inc.*
7 ☐ Vega, *Video-7, Inc.*
8 ☐ Other _____

Most Innovative New Software Product

15-1 ☐ Alpha III, *Alpha Software Corp.*
2 ☐ Clipper, *Nantucket Corp.*
3 ☐ Concurrent PC-DOS/386, *Digital Research, Inc.*
4 ☐ Dbase Mac, *Ashton-Tate*
5 ☐ Displaywrite4, *IBM*
6 ☐ Expanded Memory Manager, *Quarterdeck Office Systems*
7 ☐ Freelance Plus, *Lotus Development Corp.*
8 ☐ HAL, *Lotus Development Corp.*
9 ☐ Harvard Publisher, *Software Publishing Corp.*
0 ☐ Ingres for the PC, *Relational Technology, Inc.*
x ☐ Lotus Manuscript, *Lotus Development Corp.*
y ☐ Merge/386, *Interactive Systems, Inc./Unisoft*
16-1 ☐ Microsoft Works, *Microsoft Corp.*
2 ☐ More, *Living Videotext, Inc.*
3 ☐ PC Pagemaker, *Aldus Corp.*
4 ☐ PFS:First Choice, *Software Publishing Corp.*
5 ☐ Predict!, *Unison Technology, Inc.*
6 ☐ Professional File, *Software Publishing Corp.*
7 ☐ Professional Write, *Software Publishing Corp.*
8 ☐ R:Base System V Release 1.1, *Microrim, Inc.*
9 ☐ Silk, *Daybreak Technologies*
0 ☐ SQZ!, *Turner Hall Publishing*
x ☐ Supercalc4, *Computer Associates International, Inc.*
y ☐ Turbo Basic, *Borland International, Inc.*
17-1 ☐ VM/386, *Softguard Systems, Inc.*
2 ☐ VPIX, *Phoenix Software Co.*
3 ☐ Word 3.0 (Macintosh), *Microsoft Corp.*
4 ☐ Words & Figures, *Lifetree Software, Inc.*
5 ☐ Wordstar Release 4, *Micropro International Corp.*
6 ☐ Other _____

Name _____
Title _____
Company _____
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Tel. Number _____
City _____
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EDITORIAL

Winner or loser?

Although Wall Street was unimpressed by IBM's recent announcement of its Personal System/2 line of microprocessors, it seems clear that IBM is determinedly moving to bolster its influence over MIS.

While the stock market apparently saw little in the Personal System/2 series to erode the market share of clone vendors, it will be apparent to the MIS executive that IBM truly realizes it has to offer more on its PCs if the firm hopes to retain the loyalty of the computing hierarchy. The specifics of how IBM will add value to Microsoft Corp.'s Operating System/2 remain to be seen, but the general objectives of comprehensive communications management, data base access and common programmer and user interfaces should not be regarded lightly.

In drips and drabs, responsibility for setting internal corporate microcomputing guidelines appears to be migrating back to the MIS executive. It is he, after all, who is being called upon to develop and implement comprehensive computing strategies that will depend on those ever-present but somewhat vague concepts of knowledge workers, integration and compatibility.

Today's MIS manager is faced with a confusing array of price/performance options, add-on boards and networking demands. IBM, perhaps, sees an opportunity to once again make life easy for its most loyal customers. If it can offer in one package the features MIS and MIS's customers most desire, the inclination to look around for a cheaper alternative will diminish considerably. And if IBM can regain loyalty for its PC products, independent software firms will be clamoring to write new programs utilizing the IBM added features.

Increasingly, it appears, IBM is pulling together a strategy to regain its stature as *the* one-stop shopping emporium for today's harried corporate computer centers. Last week, we reported that the company has greatly modified its Corporate Service Amendment to make its offer of blanket service and maintenance much more attractive. We also reported that IBM conceded that its salesmen have the go-ahead to resell used equipment that was formerly leased out by the IBM Credit Corp. — certainly an indication that IBM is more than willing to sell what the customer needs rather than the latest big box off the assembly line.

Add to these developments the much anticipated delivery of the 9370 departmental system and you have all the elements for a potentially stunning resurrection — although, in truth, there are few competitors around that wouldn't be willing to shoulder IBM's problems if they could also grasp its revenue, profit margins and still substantial customer loyalty.

Wall Street may not be bullish on IBM, but it is the MIS manager who is going to determine whether the giant's strategy is a winner or loser. The next 12 months promise to be interesting as we watch the strategy evolve and see whether it does the job.

LETTERS TO THE EDITOR

Ain't seen nothin'

"1-2-3 sue! Lotus vs. clones" [CW, Jan. 19] and the editorial "The look and feel of a can of worms" [CW, Jan. 26] only prove one thing — copyright ain't right. Similarly, Apple Computer, Inc. vs. Digital Research, Inc. regarding the Graphics Environment Manager points to the same thing — that the industry, possibly aided by ill-informed lawyers, rushed into the so-called protection of copyright only to find it not that comfortable after all.

The question is not what the courts decide on what "look and feel" means. The question is whether any legal protection exists for what a program does. If it exists, it certainly does not lie in copyright, which is why I have always said that copyright is not the answer.

Now let us turn to David Ahl's "Waiting for the wind to go out of software pirates' sails" [CW, Jan. 26]. Apple's $20 billion estimate for loss to pirates is too low, if you define loss as number of copies made times the retail price per copy. But if you could arrange for lightning to strike everyone who uses a copy, would the industry be swamped with a $20 billion order? No way. Most people would find software not worth buying. They might even stop buying hardware. Ahl says let free-market forces decide. If Lotus Development Corp.'s 1-2-3 is too expensive, someone will come out with a cheaper product. Paperback Software International, Inc. did and got sued.

It is about time that the software industry says what it needs by way of protection and what it considers to be too wide a protection. Only then will these cases go away. Meantime, we ain't seen nothin' yet.

K.C. Toh
Managing Director
Unidata Sdn Bhd
Malaysia

Not the final word

My name was mentioned in "Debunking the myth of relational systems" [CW, March 30], which addressed the transaction rate that Tandem Computers, Inc. achieved with its data base product.

The article purportedly puts to rest the issue of relational data base performance. Before the reader accepts the interpretation of facts as the final word on relational performance, he should ask the following questions:

- What was the size of the set of data accessed by each transaction and what limitations, either explicit or implicit, were imposed on the data that was accessed by each transaction?
- How many unrestricted relational joins were used during peak period processing? What did performance look like once unrestricted relational joins and other relational operations were allowed to execute?
- How different did the design and structure of the data and transactions look from the data and transactions in other high-performance environments? In other words, did being "relational" have any relevance?

I suggest that performance suffers badly when the normal relational operations are performed on a data base in an unrestricted manner.

The Tandem benchmark only confirms that relational operations must be tightly controlled, either through design or through the selection of a work load that does not make use of relational operations to achieve good performance.

In addition, using one limited, carefully controlled example based on a hardware architecture atypical of much of the general populace as proof that relational technology does not have performance problems is nonsense.

William A. Inmon
Senior Principal
American Management Systems, Inc.
Arlington, Va.

This week in history

April 11, 1977
Office of Management and Budget Director Bert Lance directs federal agencies to eliminate, where possible, data systems that contain personal information about individuals. "We can reduce not only the cost of public reporting but also the extent of unnecessary intrusion by the federal government into the private lives of Americans," Lance says.

April 12, 1982
President Reagan issues a controversial executive order on government data secrecy that will lead to the classification of many new types of data, especially concerning technology. Effective Aug. 1, the Executive Order on National Security Information reverses the trend of the last several administrations to restrict the government's power to classify information.

Desktop publisher for a day (or so)

ASHLEY GRAYSON

For this column we reviewed PRESS HERE, the desktop publishing system that works like a real publishing company. This product is the first hardware/software package from Microprose, Ink., the people who write the small print in contracts. With claims to be the most realistic publishing environment available on a desktop, it promises the user many powerful features (minus any returns).

To succeed in the competitive desktop publishing market, PRESS HERE will have to pit itself against Book Maker, Ventures at the present time." After repeated attempts, the document simply vanished somewhere in the system.

In desperation, we borrowed some letterhead from a literary agency and typed up a glowing recommendation for the manuscript. Based on the letter, the scanner accepted the manuscript without further problem.

While we were trying to get our manuscript through the system, several boxes of manuscripts arrived from as far away as Wisconsin. Word had spread among hopeful writers of a new publishing company. Most appeared to be 20-year-old novels and a few computer manuscripts with titles like: "Systems Programming on the Coleco Adam," and "Your First Introductory Guide to User-Friendly Basic Games." The PRESS HERE documentation was crystal clear on the procedure for unsolicited submissions, so we stacked them unread in the basement.

The PRESS HERE editor proved difficult to call up. Requests for the editor produced one of two messages, "Not at its disk" and "Communicating with the layout program."

By accident, we discovered that if we ate lunch at the terminal, we could talk to the editor. The editor worked best over lunch, and despite the mayonnaise on the keys, we got a lot done.

By now, we were receiving hopeful submissions of poetry daily. These went in the basement with the agent's novels.

The PRESS HERE editor was easy to work with and helped us improve the manuscript. Unfor-

Continued on page 21

THIS product is the first hardware/software package from Microprose, Ink., the people who write the small print in contracts.

ture-Capital Publisher and the venerable Flyleaf.

Setting up the system proved surprising. Not only was previous computer or publishing experience not required, it was an impediment. Since publishing is described as "the accidental profession," we selected two people off the street — an insurance salesman and a wholesale leather goods dealer — to assemble the hardware. They had us up and running in no time, but left for the coast before they could explain what they had done.

Prior to installing the software, we were required to accept a license agreement. It required us to earn a lower income from using PRESS HERE than we could generate from any other computer application in exchange for the opportunity to be "in publishing."

As a first step, we tested the scanner to input a manuscript. Normally an input scanner converts a page into an ASCII text file that can be edited. PRESS HERE fed the manuscript directly from the input hopper to the output stacker and printed the message, "Doesn't meet our

Strangely enough, Grayson operates both a desktop-based publishing company and a literary agency called ADG in San Pedro, Calif. The former specializes in high-tech sales tools and product documentation, the latter in science fiction, computer books and young adult novels.

Accountable for your actions

Using common sense and computers to rethink the status of mankind

EDMUND C. BERKELEY

In June 1958, the first action in the computer field with regard to the broad responsibilities of computer people occurred. The Council of the Association for Computing Machinery (ACM) authorized the appointment of a committee to consider "the social responsibilities of computer people to advance socially desirable applications of computers and to help prevent socially undesirable applications."

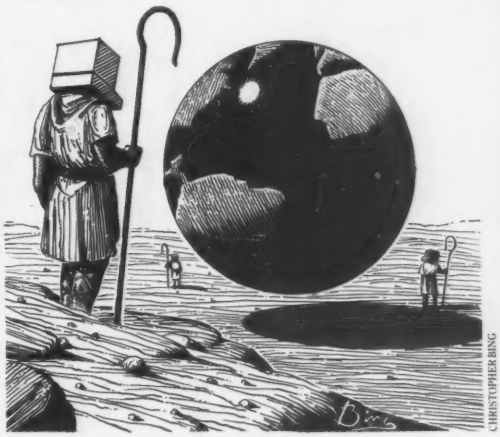
The four-person committee reported to the Council in December 1958 and said that a computer person does have special computer-related responsibilities that he cannot rightly:

- ignore,
- delegate without thought,
- neglect to think about or
- avoid deciding between conflicting value systems.

Since that time, the ACM has usually had a special-interest group of members that is particularly concerned with "Computers and Society," but it has not been conspicuous or prominent. My latest experiment with the Special Interest Group Computers and Society was joining, paying extra dues, receiving one small publication in one year and discontinuing my membership.

Nowadays, many of the people who decide to work in the field of computers and their applications say to themselves, "If I do good work in this task, what will be the end result? Who will benefit? Who will be harmed?"

One class of answer is simple: "I don't have to answer this question. The organization I work for answers it for me. If it makes a contract with a representative of the devil himself to supply, for example, computerized torture machines, I will work to produce those machines. No problem."



CHRISTOPHER BING

Another answer is also simple: "I keep track of department store (or air transportation or ocean shipping) orders and transactions via a computer system. Lots of people benefit from my work. No problem."

A third class of answer is again simple, and deceptively so: "If the computerized devices I work on are ever applied, millions and millions of people will die — aggressors, defenders and bystanders alike. But this outcome, though possible, is very unlikely in my time, almost zero chance. So, no problem for me."

There is a broadly responsible answer, however: "Whatever work I do, I must make sure the long-term effect is socially advantageous and leads to a better world, not a worse one."

The codes of responsible professional behavior established by societies in the computer field all recognize and make plain the various duties of computer people. One duty is telling the truth. Another is not devoting company time to personal affairs. A third is the effort to work hard and well for the employer — efficiently, devotedly, loyally.

These codes regularly emphasize the interests of employers. But the codes usually do not say much about the interests of employees, consumers, the pub-

Continued on page 21

Berkeley has been editor of "Computers and People" since 1951 and is the author of 15 books, including *Giant Brains or Machines That Think*, John Wiley & Sons, 1949. Berkeley Enterprises, Inc. is based in Newtonville, Mass.

Playing The Name Game — '80s, computer-style

SHAKU ATRE

What's in a name? DB2 is not a Data Base 2. It is not even a data base, but rather a data base management system. Why is it called DB2? Well, if you look at IBM's DB2 and AT&T's 3B2, apparently the names needed to rhyme with R2D2.

Does some logic hold in the name SQL? Structured Query Language is not structured. It not only doesn't have GO TOs, it doesn't have COME FROMs. And it is not a language, at least not what we think of as one. With a dozen or so verbs, it could be considered a language uttered by a genius 6-month-old infant.

The motto of data processing seems to be, "If you can't dazzle them with your brilliance, confuse them!"

I wonder about computer industry names and numbers. Why does IBM's Central Processing Unit 3081 run faster than the Model 3083, yet the 3084 is faster than the 3081? Well, Boeing's 727 is bigger than the 737, and the 747 is bigger than the 727 and the 757 is smaller than the 747.

Why did IBM change the code name of R* (R-Star) to Starburst? A young researcher at their San Jose, Calif., research center came back from lunch chewing Starburst bubble gum. The gum wrapper attracted the other scientists and by 2:00 that afternoon, R* bit the Stardust and became Starburst. Sound funny? That's how many product names are determined. In my former life at IBM, I learned that if a product's name keeps changing, either the product was very important or it didn't work.

Some other aspects of the computer industry seem odd to me. When anyone who writes documentation for micro programs writes "Push Any Key," the novice user sits in front of the keyboard looking for "Any Key."

Why is the On/Off switch on micros in the back?

Why must the cursor blink all the time? There is only one cursor on the screen anyway.

Why do most vendors downplay conversion when it's like changing a tire on a moving car?

Why do the fortune tellers keep predicting we are evolving to a paperless society when every time someone buys a micro he installs a printer with it?

There is a lot of fuzzy logic at work in the computer industry. Shouldn't we spend a little time making product names clear and consistent? Shouldn't we always keep in mind that computers are used by humans, not robots?

Atre is president of Atre International Consultants, Inc. in Rye, N.Y., which specializes in data base and information center consulting and training. She worked for IBM for 14 years in various capacities.

AN IDEA WHOSE TIME HAS COME.

"Time is money. The bottom line with NATURAL 2 is that you can develop and deliver finished systems, faster."

(User quote)

NATURAL 2
(Arrives May 8.)

SOFTWARE AG
PROGRAMMING BUSINESS SUCCESS

Publisher

CONTINUED FROM PAGE 19

tunately, before we could publish it, Microprose sent us a software update that replaced the editor we had been using with a new one. We were unable to continue until the text was converted to a form that could be read by the new editor, which had incompatible input and output standards.

More submissions arrived, including a copy of a novel by Jerzy Kozinsky that had been typed on onion-skin paper with a pale gray ribbon. A woman from Sioux Falls, S. D., sent us a narrative of her dreams during the past 30 years; a Hollywood agent sent us six scripts for "Three's Company." These all went into the basement.

We thought the document we'd been working on was ready to send to the printer. Unfortunately, no direct command existed to do that, so we had to wait for the job to be scheduled. First, the system sent the file to a module called Perfect Word (PW) that would copyedit the file. When we tried to bypass this step, a PRESS HERE message informed us that everybody in publishing subscribes to PW, so we had to wait for its opinion.

While waiting, PRESS HERE advised us to begin rejecting the unsolicited manuscripts and printed out a selection of form letters to attach to them. These ranged from the ubiquitous "Doesn't meet our needs . . ." to "An experimental work of this type must search for the right house before it can achieve the publishing program it needs. Best of luck on placing it elsewhere."

After what seemed like months, Perfect Word finally completed processing the manuscript. A system message informed us that the file was being sent to the printer immediately, so we had only five seconds per page in which to proof the galleys. As the laid-out pages flashed across the EGA (Electronic Galley Approval) screen, we realized to our horror that the original manuscript was being printed — the unedited one that had disappeared into the system on day one!

'Unbelievable Fluff'

We let it go. Rather than try to recover from the disaster, we consoled ourselves by playing with two support programs: a graphics utility called PUFF and a game called Genre Generator. PUFF is a plotter program that Puts Unbelievable Fluff and Foil on the covers of paperback books. About half the time the book's plot succeeds, but the cover sells the book.

Genre Generator is a skill game in which the player tries to maneuver his book into a slot: self-help, western, mystery and so on. If the book he's playing with doesn't fit into a slot, he loses.

Months later, at a trade show, we discovered our original editor, working on a competitive desktop publishing system. It seems vendors of desktop publishing systems never improve their editors, they just swap them. Some of these editors improve as a result of being reprogrammed for so many systems, others don't. We tried to get our old editor back to PRESS HERE but failed. The editor was looping until it got its own imprint at a big multiuser system and became a recognized word star.

Conclusion: PRESS HERE is as close to real publishing as you can get on a desktop.

Accountable

CONTINUED FROM PAGE 19

lic and society. Nor do the codes usually mention the interests of children, unborn generations or the Earth's biosphere where some hundred million species live.

But changes in the real world from 1945 (the first use of the nuclear bomb) to 1987 have produced a new appraisal of the status of humans. We are a species of life that occupies a certain narrow living space on earth. Will we as a species survive or die off?

This new appraisal demonstrates that many of the things we used to believe without question are no longer true, that the world in the last 40-odd years has become for humans a novel and strange one.

Some of the critical happenings in these 40 years include: the increase in population from not much more than two billion to more than five billion; the decrease of economic resources, such as oil; the increase of stockpiled nuclear weapons from zero to more than 50,000; and the increase from zero to millions of computers applied in human activities.

When faced with such a collection of problems, what should we do? Perhaps the first step is to select a group of people who are educated and trained to solve complicated problems using science, common sense and wisdom. Then we say to them, "Here is a hard task for which you are much needed. Work on it. How do you verify your proposed solution?"

This category of persons should be computer people. There are now more than a million and perhaps more than 10 million. A new nonprofit society, called Computer Professionals for Social Responsibility, has formed with more than 2,000 members. The chief issue around which this society developed is the opposition by scientists and physicists to the Strategic Defense Initiative, or "Star Wars," fantasy of the Reagan administration. Opposition to nuclear weapons, however, began in 1945, 42 years ago.

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SOFT TALK

Charles Babcock

Imlay: There's room for IBM

In the booming Buckhead section of Atlanta, the building cranes outnumber the pessimists by a wide margin, and the executives of Management Science America, Inc. (MSA) look out their office windows and see little but better times ahead.

John P. Imlay Jr., who is not easily counted among the ranks of pessimists even in desperate times, paused over lunch at MSA headquarters recently to cite the potential for expansion in the applications software market.

Europe, Japan and the rest of Asia have lagged far behind the U.S. in purchasing applications software, he observes. In the U.S., about 70% of major businesses buy packaged software; in Europe, the figure is closer to 50%. In Japan, it's 5%.

MSA has beefed up its overseas effort during the past year. "Our business in Japan is up 100%, though that's an increase on a small base," Imlay recounts.

Unlike some independent software vendors, Imlay thinks there will be benefits from IBM's entry into applications software. As IBM attempts to market business applications or packaged solutions to vertical-market business problems, packaged software will gain a new air of legitimacy. Buying an ap-

Continued on page 27

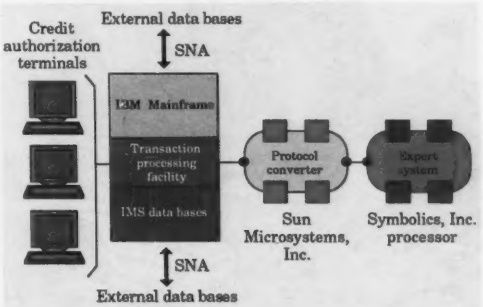
Expert system vs. credit fraud

BY ALAN ALPER
CW STAFF

NEW YORK — The American Express Co. is calling on the advice of an expert — an expert system, that is — to help it weed out bad credit risks and reduce losses. The system relies on 800 rules derived from American Express' best credit authorizers.

American Express, according to expert systems watchers, thus becomes the first charge card company to utilize artificial intelligence in credit authorization applications. The expert system — called Authorizer's Assistant — was developed by Inference Corp. in Los Angeles and will be fully functional by mid-year, according to Robert Flast, vice-president of technology for American Express' Travel Services Co.

American Express Co.'s proposed implementation of an expert system



CW CHART: SUSAN ALDAM

Heavy impact seen

"This expert system has the ability to touch more people than any other expert system ever implemented," says Tom Schwartz, an expert systems consultant and publisher of "Who's Who in AI."

American Express had good reason to seek the assistance of an expert system. The American Express Card — unlike bank credit cards — has no credit limit. Losses caused by bad credit authorizations and fraudulent use of its charge cards have been substantial during the last few years, observers say. Flast is unwilling to quantify the losses.

Flast, however, concedes that conventional computer systems have been only partially

Continued on page 30

VM Software adds SQL table editor, seeks broader market

BY ROSEMARY HAMILTON
CW STAFF

RESTON, Va. — VM Software, Inc. recently introduced a table editor for the IBM Structured Query Language (SQL)/DS relational data base management system, marking the vendor's first step outside the IBM VM operating system utilities market.

VMSQL/Edit, scheduled for shipment later this month, was designed to assist programmers in updating and changing SQL/DS data. It allows users to insert changes directly over displayed data as well as insert or delete rows of data, the vendor said.

The software includes a limited-application generator tool that would enable users to design tabular-style screens. "It's not a 4GL, but it can generate small applications," said Pam McFarland, a senior vice-president. "You can put several tables on a screen, but you can't do elaborate screen painting."

The product was developed by the Reston firm's recently formed Applied Relational Technology division. VM Software had strictly marketed utilities for the VM operating system, such as its VMCenter product, a collection of tools to help manage various system components and procedures.

"We hope to introduce other products to help us diversify, but we don't want to get too far away from what we know best — VM and relational technology," said McFarland, who also serves as general manager of the new division.

VMSQL/Edit runs under VM/SP Release 3 or later. It can be licensed for $12,000, or customers can opt for a three-year, $8,000 license.

Nomad gets SQL query abilities

BY CHARLES BABCOCK
CW STAFF

WILTON, Conn. — A version of the Nomad fourth-generation language capable of composing SQL queries has been trimmed of its independent data base management system and is being offered for use with IBM and Teradata Corp. relational DBMS engines.

SQL Nomad, from D&B Computing Services, can perform a number of functions still absent from IBM's DB2 and Structured Query Language (SQL)/DS when queried by IBM's SQL.

SQL Nomad, for example, can support outer joins and some forms of inner joins not included in IBM's SQL, such as Division.

SQL Nomad "fetches the data back and does the join itself," said Nicholas Rawlings, technical director of D&B.

In addition, SQL Nomad later this year will be able to provide referential integrity through support of foreign keys and user-defined rules, according to Rawlings.

The referential integrity will apply only to updates executed

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Inside

- XA Systems offers enhanced version of Tracmacs. Page 26.
- Unisys adds security software for its A series mainframes. Page 32.
- American Management announces a management tool aimed at VAX 2000. Page 33.

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SOFTWARE NOTES

Du Pont funds Cortex development

Du Pont Co. is providing a multimillion dollar development fund for **Cortex Corp.** in Waltham, Mass., in exchange for an undisclosed number of licenses for Cortex products. Du Pont uses Cortex's Application Factory, an application generator for the Digital Equipment Corp. VAX.

Cortex is preparing to announce a graphics-based front end that will allow the diagram of an application to be fed into the Application Factory, where it will be converted into code.

David M. Saykally, president of **Answer Systems**, a subsidiary of **Sterling Software**, has resigned his post over "fundamental differences in marketing and investment direction" of the Canoga Park, Calif., company.

Saykally was appointed to the post after Sterling acquired Informatics General Corp. in 1985 and was recently named President of the Year within Sterling.

The young **Delaware Valley DB2-SQL/DS Users Group** is slated to meet April 28 to hear Peter Levine of the Gartner Group, Inc. speak about DB2's migration to RStar or distributed data base Starburst technology.

In addition, Sharon Weinberg, president of Codd & Date Consulting Group, will address future DB2 developments. The group can be contacted at Suite 505, 3650 Silverside Road, Wilmington, Del. 19810.

MVS version of analyzer hits market

BY ALAN J. RYAN
CW STAFF

LOS GATOS, Calif. — XA Systems Corp. has released a version of a test-coverage analyzer program originally known as Tracmacs.

Called Test-Xpert, it was designed to analyze test results of Cobol programs running on IBM mainframes under the MVS operating system.

Current Tracmacs users can obtain Test-Xpert free when they purchase an XA Systems maintenance contract for $2,700, or 15% of the purchase price, according to Nancy Price, XA Systems' director of marketing. XA Systems acquired the rights to the MVS version of Tracmacs several months ago from software developer Peter Bell, who introduced the product in 1982.

'Easier to install'

To enhance the original Tracmacs, XA Systems added an optional interface to IBM's TSO/ISPF programming environments, Price said. Also added were an analysis report and some statistical information. "We've also done some internal things, which make the product much easier to install and use in an everyday environment," she added.

Like Tracmacs, Test-Xpert reportedly generates test analysis reports detailing the number of logic paths taken, their sequence and the paths that were not taken.

Test-Xpert also automatically provides users with summary reports on the percentage of software code tested and lets users select reports on a single program or on a group of programs.

The TSO/ISPF interface allows users in those programming environments to generate reports and view them either in batch mode or on-line.

The license fee for Test-Xpert is $18,000. The TSO/ISPF option is available for an additional $5,000. The current installed base of Tracmacs is about 75 licenses, Price said.

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Nomad

FROM PAGE 25

through SQL Nomad rather than throughout the data base, Rawlings said.

SQL Nomad will also support a date data type; DB2 does not have that capability, Rawlings added.

SQL Nomad includes 140 mathematical and decision-support functions, according to the vendor.

Application range

These functions are intended to allow users to develop a range of applications — from ad hoc queries to complex financial analysis.

SQL Nomad can also be used to create tables and fields in DB2 and SQL/DS or Teradata systems.

The user identifies the data base as SQL and proceeds to formulate queries in the Nomad language.

The commands and verbs of SQL Nomad are the same as the commands and verbs found in Nomad2, which is D&B's primary product, according to Rawlings.

SQL Nomad is able to read, update and create tables in DB2, SQL/DS and Teradata DBC/1012 relational systems, he added.

The product is priced from $56,250 to $75,000, depending on machine size, according to the vendor.

Nomad2 users may obtain the SQL interface as a $10,000 to $15,000 option.

Room for IBM

FROM PAGE 25

plication will be a more acceptable route to travel, even when substantial company revenue may ride on what was once termed generic marketplace software rather than in-house, proprietary software. Worldwide, the applications market will double, Imlay predicts.

This point of view is not shared by all of his comrades in ADAPSO, the organization of software and service companies.

At ADAPSO's November 1986 meeting in Phoenix, Bernard Goldstein of Broadview Associates termed IBM's agreement with a banking applications vendor an "acquisition" rather than a marketing agreement.

Goldstein predicted that IBM was preparing to move into selected vertical application markets through long-term agreements with "best-of-breed" suppliers, and a shudder went through the ranks of the independent vendors as they imagined what would happen if they weren't the chosen ones.

Watchdog role

Imlay was named to a panel to review IBM's deal with Hogan Systems, Inc. When asked about that watchdog role, he chuckles and says, "We only watched the dog once."

Imlay's panel has reported to the ADAPSO Board of Directors. "We found nothing wrong. IBM is getting into the business. As long as they do it fairly, there isn't much we can do about it," he says.

This is the point of view of a mature, independent supplier. It is the view of someone who thinks there will be room for independents even if IBM attempts to dominate selected areas of the applications arena. It is also the view of a vendor that shied away from offering a mainframe data base management system that might compete with IBM's.

According to Imlay, the needs of the business world are so varied that the light-footed independents are always going to find a demand for their talents.

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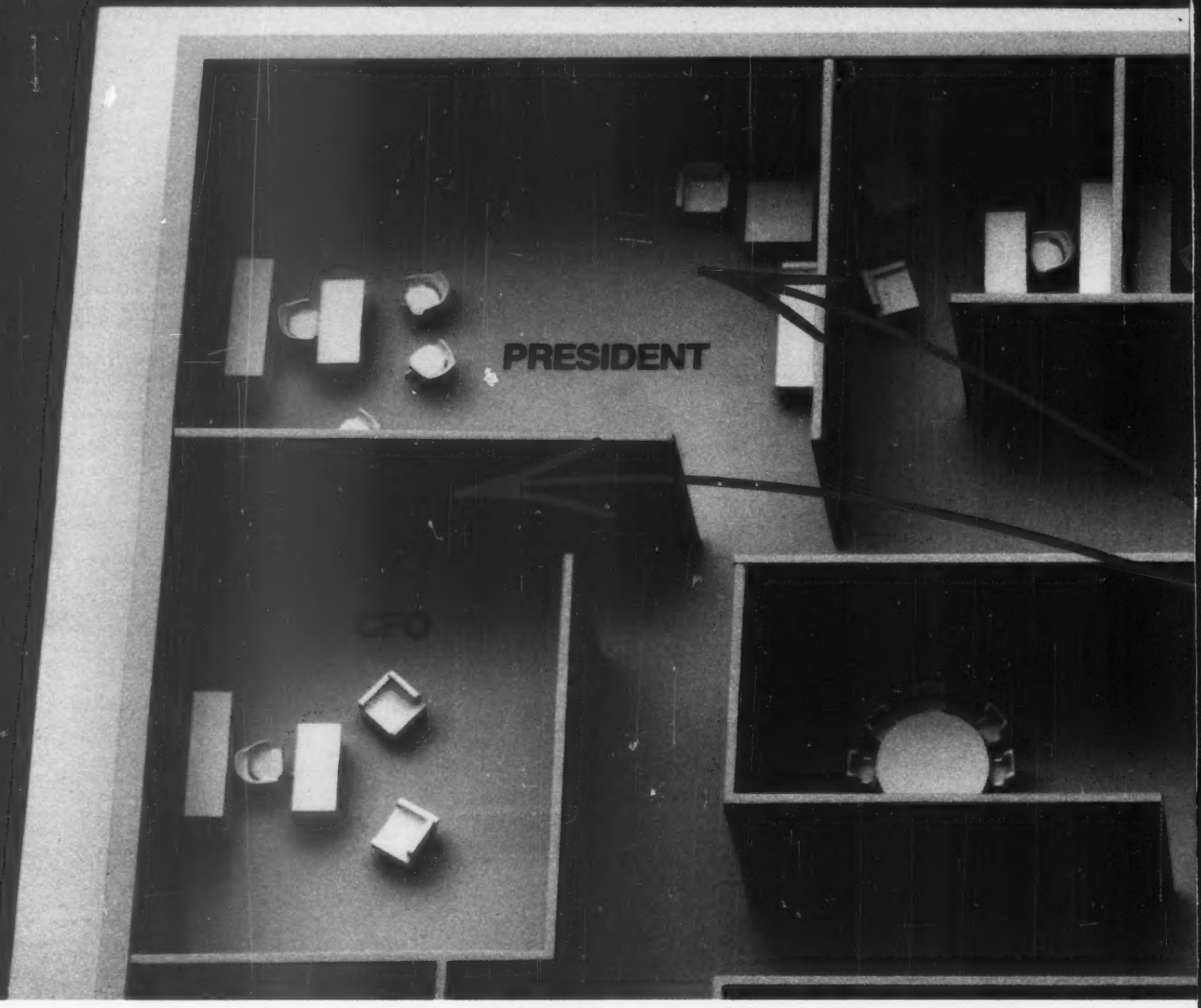

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Expert system

CONTINUED FROM PAGE 25

successful in limiting bad credit risks and fraud. Moreover, such technology has been slow and unwieldy to use, he admits.

Using the old system — running on an IBM 3033 mainframe — credit authorizers first had to enter IBM's Transaction Processing Facility (TPF) and then go offline searching through as many as 12 data bases, via CICS and IMS, for additional card-holder information.

It was two years ago that Flast, then vice-president of transactional services, decided credit authorizers could benefit from better tools to make consistent decisions.

"It seemed like the perfect fit for an expert system," Flast recalls. "We decided to put all of our resources into this one major project."

In mid-1985, Flast proposed that the firm contract with an expert systems developer to build a prototype expert system to assist — not replace — authorizers.

Later that year, American Express chose Inference, developer of the automated reasoning tool, to build a prototype expert system in a little more than one year.

Inference developed the system to run on a coprocessor accessing data from the IMS data bases residing on the mainframe. A Symbolics, Inc. processor was selected to run the expert system. A Sun Microsystems, Inc. workstation — acting as a protocol converter — enabled the Symbolics processor to extract data from the IMS data bases on the IBM mainframe.

Least risky approach

This approach, while not optimal, was the least risky way for American Express to test the expert system concept, Flast explains.

The biggest challenge in building Authorizer's Assistant was not getting the expert system to talk to TPF, Flast says. The difficulty arose in getting TPF and IMS to talk to one another since IBM does not provide that capability. American Express, therefore, had to build a bridge to allow TPF and IMS to communicate while Inference developed the expert system.

Inference began the development cycle by sending its knowledge engineers — software designers who, through a rule-based approach, create an expert system — to interview American Express' five best authorizers in Fort Lauderdale, Fla. It was this amalgam of information that formed the knowledge base for Authorizer's Assistant.

"It was a gradual process of building a knowledge base," notes Laurel Miller, manager of credit authorization. "We began with a finite number of situations dealing with specific customer types or cases and from there broadened the scope."

Authorizer's Assistant's function was to gather, organize and reason all data relevant to each transaction from American Express' customer files, notes Alexander Jacobson, Inference president. Factors such as a customer's outstanding charges, payment history and buying habits are used by the system to ascertain whether the charge in question should be approved.

Specifically, the system assesses the magnitude and nature of the credit risk, recommends acceptance or denial of the transaction and asks questions to resolve concerns, updates recommendations as questions are answered and provides an explanation for all recommendations.

"The expert system takes data from 10 or 12 data bases and launders the information," Jacobson explains. "It does the reasoning the authorizer does and then makes the decison to grant or not grant credit."

Can be overridden

The system can be overridden by authorizers if they disagree with a decision to grant credit. The authorizer does this by asking the expert system for an explanation.

"If they still think it's the wrong call, they are expected to make their own decision," Flast points out. "The authorizer is still responsible for the decision."

A prototype, completed in April 1986, had 520 rules. After some refinement, a pilot version of the product debuted last November featuring some 800 rules, Jacobson says.

"Our experts have found it interesting to have their expertise played back to them," Flast says. "They're impressed with the system's authenticity."

Flast says it is difficult to quantify the projected benefits of the Authorizer's Assistant. One objective is to shorten the total handling time of each transaction by 20% to 30%. More important, Flast says, he hopes Authorizer's Assistant will reduce losses.

With the expert system's concept proven, American Express is now planning to construct what it calls the optimum architecture for Authorizer's Assistant. In the optimal approach, the authorizer will enter TPF, which will then activate Authorizer's Assistant. The expert system will then access information from the IMS data bases and make its credit authorization recommendation.

Flast is currently considering proposals to have a single vendor supply the entire system's hardware. Among the bidders for the hardware contract are IBM, Sun, Symbolics and Texas Instruments, Inc., Flast notes.

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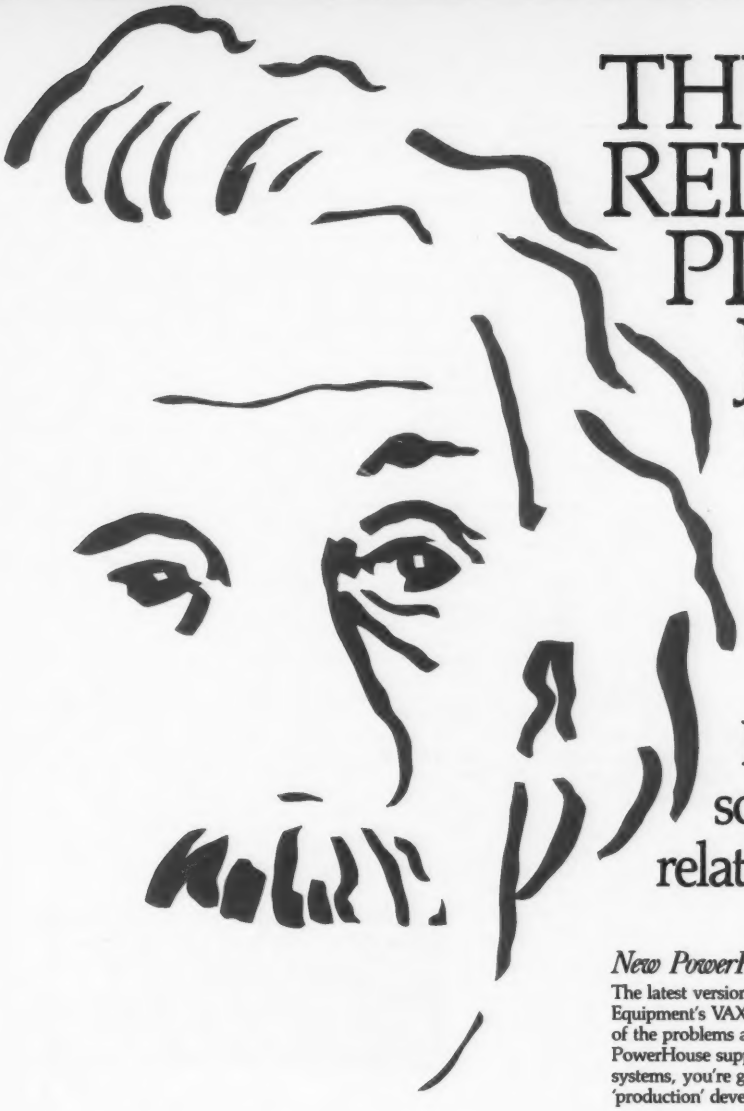

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NEW PRODUCTS

Systems software

Unisys Corp. has announced **Infoguard**, a security software product for its A series of mainframe computers.

Infoguard allows users to identify a security administrator who has exclusive authority to establish and maintain the security environment. It is a menu-driven system featuring password management facilities, a disk-scrub mechanism that writes over an existing area of a disk when a new file is opened and system auditing.

The security administrator can configure a security message workstation to monitor security activities on the system.

Infoguard is available through a five-year extended-term purchase and is priced from $8,450. On a monthly license basis, it is priced from $250 per month.

Unisys, P.O. Box 418, Detroit, Mich. 48232.

Applications packages

Outlook Software, Inc. has announced **Version 1.1** of its **Outlook Report Writer** software for automatically creating customized reports, displays and graphs off the IBM System/38 data base.

Version 1.1 allows users to create data dictionaries directly from the System/38 data base. It has the ability to select all fields at once from a file definition in the data dictionary. Users can now link files within the Report Writer based on multiple fields within the files. Up to 15 files can be linked, and files can be linked based on up to 15 fields.

Other enhancements include the ability to create new retrievals, reports, displays and graphs by duplicating existing ones and the ability to display all submitted jobs.

The Outlook Report Writer Version 1.1 costs $5,500.

Outlook Software, Suite 117, 1 Woodfield Lake, Schaumburg, Ill. 60195.

Orion Information Systems has announced **Organon**, a word processing system designed for Digital Equipment Corp. VAX and Microvax computers.

Organon is said to function as a complete office automation system with dynamic word and list processing capabilities. Features include menu and command drivers, what-you-see-is-what-you-get display, on-line Help and documentation.

The basic Organon package is priced at $1,500 for the Microvax and $2,500 for the VAX.

Orion Information Systems, Suite 260, 13741 Foothill Blvd., Sylmar, Calif. 91342.

Computer Covenant Corp. has enhanced its **Tool Inventory System.**

The enhanced Tool Inventory System includes customizing kits, an expanded where-used tool inventory display, a purchase requisition history, a tool calibration and repair schedule, a Help procedure for classifying tools and the ability to read bar coding.

The system includes a software virtual-memory capability, a print-spooling utility and American National Standards Institute terminal support.

The system runs on Digital Equipment Corp. PDP-11 and VAX systems, Unix and Novell, Inc.-based systems and the IBM Personal Computer. Prices range from $1,000 to $3,000.

Computer Covenant, Suite A211, 309 Farmington Ave., Farmington, Conn. 06032.

Utilities

Lattice, Inc. has announced the **Apollo to MS-DOS C Cross Compiler** for the Apollo Computer, Inc. Domain Series 3000 workstation.

The Apollo Domain Series 3000 also supports Apollo's Domain/Personal Computer coprocessor board, an IBM-compatible computer on a single-printer circuit board. It features an Intel Corp. 80286 CPU and 1M byte of random-access memory, so Microsoft Corp. MS-DOS and micro-based applications can be run as a window on the Apollo.

With the Apollo to MS-DOS C Cross Compiler, programmers can reportedly write, compile, link and debug applications using Apollo's 68020-based system, then test the program under MS-DOS at the same workstation.

The Apollo to MS-DOS C Cross Compiler costs $500.

Lattice, P.O. Box 3072, Glen Ellyn, Ill. 60138.

Computer Software Products, Inc. has announced **IF**, a control statement-driven file selection and correction utility for OS/VS or DOS environments.

IF is said to allow users to create and modify test files and to perform troubleshooting and limited production functions.

According to the vendor, all program processing is accomplished via six user-specified operations. Operations may be combined into logical sentences of any length and record fields may be predefined in data dictio-

Continued on page 33

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☐ dBASE II, III, III plus (including Clipper and Wordtech)	☐ C-ISAM	

The companies whose products are mentioned above, own numerous trademarks.

Continued from page 32

naries. Also, IF is said to be able to arithmetically combine integers, no matter what the data type.

IF is priced at $1,000.

Computer Software Products, P.O. Box 64, Waldo, Ohio 43356.

Mackinney Systems has announced **Access to DLI or IMS Data Bases** (ADLI), **PDS/MGR**, **Kwik-Key** and **CICS/Spooler Release 3.0**, IBM mainframe utilities.

ADLI is a transaction said to enable the user to view or update any DLI or IMS data base attached to CICS. PDS/MGR is said to automate the management process of partitioned data sets. Kwik-Key is a replacement for the IBM Bldindex utility. Release 3.0 of CICS/Spooler, the printer terminal spooling system for CICS, is said to improve throughput of printer-oriented programs.

ADLI, PDS/MGR and CICS/Spooler Release 3.0 each cost $1,295, or $495 per year. Kwik-Key costs $1,495, or $595 per year.

Mackinney Systems, Suite 112, 2674-A S. Glenstone, Springfield, Mo. 65804.

American Management Co. has announced **V-X Master-2000**, a system management tool for Digital Equipment Corp.'s VAX 2000 computers.

V-X Master-2000 is a menu-driven system said to provide functions on each area of system management including managing users, ports, disk space, queues, security and backing up the system. It provides error checking and offers on-line Help as well as on-line documentation.

V-X Master-2000 is priced at $895.

American Management, 420 Bedford St., Lexington, Mass. 02173.

Language Technology, Inc. has announced **Release 4.2** of its **Recorder** structuring tool said to support the full range of IBM OS Cobol.

Features of Release 4.2 include formatting enhancements such as procedure orders, statement formats and listing formats; improved reporting and documentation such as improved dead code and names reports; and improved diagnostics.

Recorder is priced at $150,000. A one-year license costs $75,000 and monthly rental is $10,000.

Language Technology, 27 Congress St., Salem, Mass. 01970.

Pacific-Sierra Research Corp. has announced a version of **Forge**, its interactive software for the optimization and restructuring of Fortran, for supercomputers.

Forge, which runs under standard Unix and VMS operating systems, is accessible from terminals and personal computers with Digital Equipment Corp. VT100 emulation capabilities. It allows the user to analyze code timing at the DO Loop level; interactively restructure and optimize code; format code automatically; learn about architectures and optimizing techniques through an on-line seminar; record an audit trail to recreate or modify any session; edit the code; specify hardware and software target systems; and create transportable Fortran 77.

A single CPU license costs $50,000, plus $5,000 annual maintenance.

Pacific-Sierra, Suite 203, 312 Main St., Placerville, Calif. 95667.

Development tools

Computer Information by Design, Inc. has announced **Release 3.0** of the **Focus/Tools Modify Writer**, an application generator for Focus, the fourth-generation language by Information Builders, Inc.

Release 3.0 is said to allow users to build a complete data maintenance procedure with custom screens, multiple record processing and user-defined field validations. Standard features allow users to create add, change, delete and browse procedures.

Focus/Tools Modify Writer on mainframes is priced at $7,500.

Computer Information by Design, Suite 411, 2444 Wilshire Blvd., Santa Monica, Calif. 90403.

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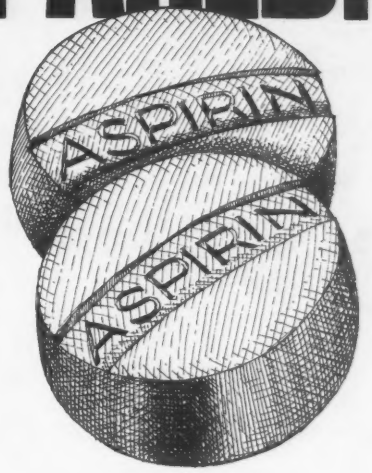

Converting to IBM's latest VSE/SP release can be a hard pill to swallow. In more ways than one. But there's a proven, cost-effective alternative to high blood pressure and frayed nerves: the MVT/VSE operating system from Software Pursuits, featuring multi-path channel scheduling and 15 dynamically allocated regions. And if you can't avoid the conversion, you can still add the new industry-standard SPRI spooler to make your system faster and more flexible. Both come with all the high-performance features, 24-hour technical support, and on-site installation assistance you'll ever need. Get all the facts. Call us today for more information and your FREE "DP SURVIVAL KIT." Then prepare to relax.

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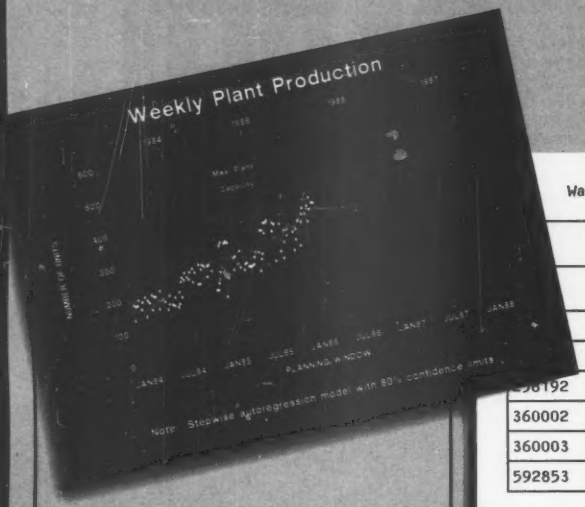

Warehouse Inventory Report - 16JAN87

	Quantity on Hand	Quantity on Order	Projected Reorder Date
	123980	10000	THU, FEB 12, 87
	89450	5000	FRI, FEB 20, 87
598192	20110	1000	MON, MAR 30, 87
360002	8585	0	TUE, FEB 10, 87
360003	15985	500	TUE, FEB 10, 87
592853	469120	20000	WED, FEB 18, 87

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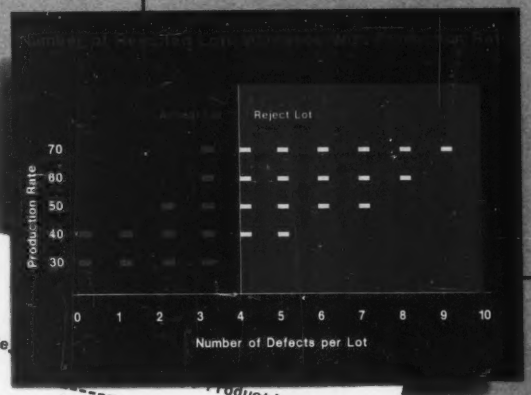

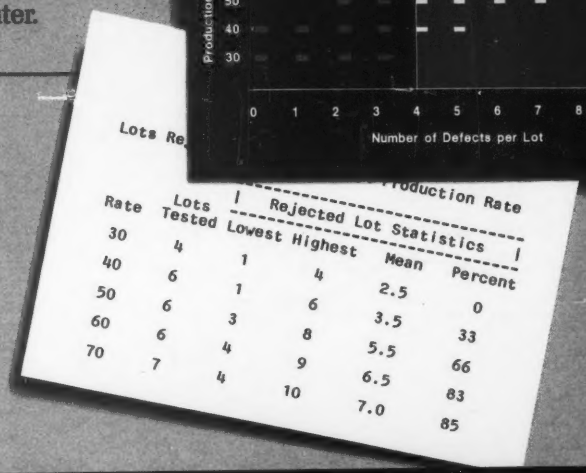
Lots Re
Production Rate
Rejected Lot Statistics
Rate Lots Tested Lowest Highest Mean Percent
30 4 1 4 2.5 0
40 6 1 6 3.5 33
50 6 3 8 5.5 66
60 6 4 9 6.5 83
70 7 4 10 7.0 85

* Computer Intelligence, January 1986.

The SAS System runs on these minicomputers: Digital Equipment Corp. VAX™ 8xxx and 11/7xx series under VMS™ and MicroVAX II™ under MicroVMS™; Prime Computer, Inc. Prime 50 series under PRIMOS®; and Data General Corp. ECLIPSE® MV series under AOS/VS. The SAS System also runs on IBM 370/30xx/43xx and compatible machines under OS, CMS, DOS/VSE, SSX, and ICCF; IBM XT/370 and AT/370 under VM/PC; and IBM PC XT and PC AT under PC DOS. Not all products are available for all operating systems.

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SMALL TALK

William Zachmann

Easing the 3½-in. blues

IBM's move to 3½-in. disk drives with the new Personal System/2 microcomputers will help build momentum and encourage the acceptance of these drives, which are based on the hard-shell format originally developed by Sony Corp.

In fact, the microfloppy drives are already used on the Apple Computer, Inc. Macintosh and a number of IBM-compatible laptop systems and have considerable advantages over the older 5¼-in. floppies.

The small size of the microfloppies reduces storage-space requirements. They can actually be carried in a shirt or jacket pocket, and the hard shell with a retracting metal cover makes it possible to do so without damaging them. Unlike with standard floppies, no external storage sleeve is required.

The firm casing on the 3½-in. disks also makes it possible to keep tighter tolerances in the drives. This makes it easier to obtain greater areal densities than with 5¼-in. disks. Currently available disks and drives offer 2M-byte unformatted capacity, yielding 1.44M-byte formatted capacity in the IBM

Continued on page 38

IBM offers OS/2 planning help

BY DAVID BRIGHT
CW STAFF

IBM has announced two-day courses on planning for its new Operating System/2 and on the planning and installation of its enhanced 3270 Workstation program, both of which work with its recently announced Personal System/2 family.

Both courses were designed primarily for personal computer technical coordinators.

The OS/2 course pertains to Extended Edition Version 1.1, which will reportedly include the Presentation Manager graphical interface, a relational data base system and various communications facilities as well as multitasking capabilities.

Although the availability of this version will not be announced until the fourth quarter, IBM is slated to begin teaching the course in May free of charge.

The emphasis of the course will reportedly be multiprogramming and memory management. An overview of the IBM Personal Computer and Personal System/2 architectures and capabilities of OS/2 will also be provided, according to IBM.

The course also reportedly will include strategies for migrating applications from IBM's PC-DOS to OS/2 that fully exploit the new operating system's range of functions.

The syllabus

According to IBM, successful completion of the course enables students to compare and contrast the architectures of the IBM PC and the IBM Personal System/2, develop a plan for implementing OS/2 and describe the advantages and considerations of migrating applications to that operating system.

Considered by some observers to be an interim solution for users waiting for OS/2, the 3270 Workstation Program allows PC-DOS 3.3 to provide multitasking of PC-DOS sessions, host sessions and notepad sessions.

Teaches installation

The course is intended to teach how to install, customize and operate the 3270 Workstation Program. The course is said to describe how the program manages hardware interrupts, memory, programs and communications.

Information will also be given about programming with the high-level language program interface and about migrating to OS/2 Extended Edition Version 1.1.

IBM plans to begin the course in June, which is when the first version of the program is expected to be available. The tuition is $480.

IBM said that a student who completes this course should be able to configure and install the 3270 Workstation Program, describe how the processor manages up to 2M bytes of memory through bank switching, use the multitasking feature and describe how the 3270 program manages well-behaved PC-DOS programs.

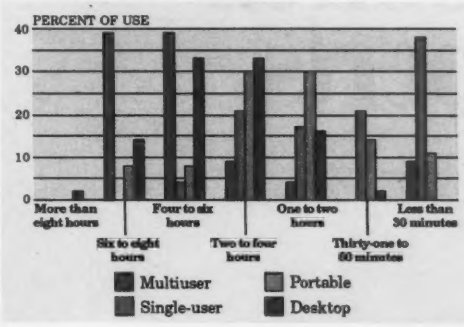
The courses are so new that IBM has not been able to finalize the scheduling, location and enrollment information.

IBM said it would make that information available by the end of this month through its Direct-Education telephone line, the number of which can be obtained from IBM marketing representatives.

Data View

Microcomputer usage - hours per day

Based on interviews with executives from 150 major corporations



INFORMATION PROVIDED BY NEWTON-EVANS RESEARCH CO.
CW CHART: SUSAN ALDAM

The end of 'brute force'

Pacific Pride replaces mini with PC network

BY DAVID BRIGHT
CW STAFF

SALEM, Ore. — On Oct. 1, 1985, Pacific Pride Services, Inc. unplugged its $35,000 3-year-old IBM Series/1 minicomputer and stored it in the basement. A broker eventually took the box off the company's hands for $2,000.

Pacific Pride, which runs a chain of commercial fueling stations in the western part of the country, had quickly outgrown the minicomputer as franchises were added to the chain.

The company chose as its replacement a Compaq Computer Corp. Deskpro 286 personal computer that now serves as the hub of a microcomputer network spread out among 32 franchises.

Continued on page 39

Inside

- Microsoft reworks support structure. Page 36.
- IBM tool swaps data in and out of Personal System/2 memory. Page 38.
- AST Research adds character-recognition software for Turboscan. Page 44.

Say 'good buy' to compilers, collateral programs

This is the third in a four-part series on Basic products for IBM Personal Computers and compatibles.

BY T. A. ELKINS
SPECIAL TO CW

For this series, a good buy constitutes powerful and reliable software at an unusually low price. A couple of compilers and several collateral programs meet these requirements.

A favorite of mine is Zedcor's ZBasic. This inexpensive compiler produces the only COM files of any of the systems tested. These files are tight, fast to load and reliable. Such files are restricted to a program size of 64K bytes, but along with normal programming, ZBasic allows access to a great number of internal DOS features, and the modest COM files are an advantage when moderate tasks are undertaken.

For example, with ZBasic, you can write a very simple Enquire function that could be used in batch files to ask a question and return a particular error level that reflects the user's response. With this refinement, your batch files can branch as you direct an execution time. No other system we tested allowed such ease of use.

One of ZBasic's bigger assets is also one of its biggest faults. ZBasic uses packed binary coded decimal (BCD) numeric encoding. This system places two decimal digits into each byte of stored numeric data. For accounting work, this scheme is a good one; all money amounts are exact.

In the common Microsoft Corp. or IEEE representation, the entry $1.01 is a repeating fraction that only rounds to the desired value. ZBasic also allows a large range in calculated precision that may be set by the user. On the debit side, these BCD operations execute quite slowly.

Another compiler that deserves high marks is Microsoft's Quickbasic. While Quickbasic Version 1.00 was replete with bugs, Version 2.0, which we tested, was nearly bug-free and had a great increase in power and flexibility. Version 2.1 was not available in time to test. Microsoft has just announced Quickbasic Version 3.0.

Both ZBasic and Quickbasic open into editors, will compile programs and automatically link them very simply in memory and offer an ease of use that is remarkably near that of a common interpreter. Both have internal Help systems that are useful. Quickbasic also allows the user to attach special libraries and considerably improve the system's speed or add special hardware interfaces.

Quickbasic will also compile Object files for linking into programs and is bundled with one of the best linkers available. Finally, Quickbasic allows the production of user-built libraries that can be very handy, indeed. And compiled programs from either of these systems may run three to eight times faster than did the original GW-Basic and Basica programs.

Quickbasic fails in its complete lack of recursive capability — expect to buy an update — and its failure to circumvent

Continued on page 40

Microsoft fuses support units

BY DAVID BRIGHT
CW STAFF

REDMOND, Wash. — In an effort to provide a central knowledge base for its customers, Microsoft Corp. has merged its end-user and OEM support services into one Product Support Services group.

The support group has added two services: a school for both end users and applications developers and an on-line subscription-support service for software developers and OEMs.

The group will help Microsoft make more effective use of its technical knowledge, according to Sunny Baker, director of planning and marketing for Product Support Services. Customers will now have just one telephone number to call for support.

The new school, dubbed Microsoft University, will initially have five instructors and about 15 courses. It will be located either at Microsoft's Redmond headquarters or at a separate facility nearby. The hands-on courses are set to include instruction in Microsoft's MS-DOS operating system, Windows software development, Windows debugging, C Compiler and Macro assembler as well as network programming. The courses, which will last from two to five days, are priced between $500 and $1,200 per person.

Product Support Services product manager Kent Sander said the group hopes to eventually offer accredited college credits for the courses.

If the group succeeds, Chairman Bill Gates may finally be able to get his undergraduate degree. Gates dropped out of Harvard University in the mid-1970s to work on a Basic language for an early personal computer called MITS, or the Micro Instrumentation and Telemetry Systems Altair.

Bulletin boards

Through an on-line subscription-support service called Microsoft Dial, software developers and OEMs who need help with systems or language products will be able to access product bulletin boards containing a centralized data base, the company said. The bulletin boards include answers to previously submitted questions, lists of known product anomalies, sample programs, product update information and Microsoft application notes.

Users who call the bulletin boards have the choice of browsing through the available information or initiating an automatic search for answers to specific questions. If a subscriber does not find the answer to his question on the bulletin board, he can call support engineers.

The Dial annual subscription fees range from $450 to $850. While the service is geared toward software developers and OEMs, end users may also sign up for it, Microsoft said.

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The Change Control Experts.

Toshiba adds chassis to rival Compaq

IRVINE, Calif. — In an effort to provide the same level of functionality as Compaq Computer Corp.'s recently announced Portable III computer, Toshiba America, Inc. has announced an expansion chassis for its portable computers that provides five expansion slots.

The 18-lb Compaq machine, which most analysts viewed as taking aim at the Toshiba T1100 Plus and T3100 portables, has an optional expansion chassis that provides slots. The expandability of the machine was an advantage at the time of announcement, and Compaq pushed the full functionality of the machine as its key benefit.

The Toshiba expansion chassis, which sells for $1,000, is available on the T1100 Plus and the T3100.

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Easing blues

CONTINUED FROM PAGE 35

PC-DOS and Microsoft MS-DOS format.

There is no question that the 3½-in. drives and disks are a better mousetrap, and were there no personal computers yet, the 3½-in. drives would be the obvious choice. But there are already millions of IBM Personal Computers and compatibles in use, all with 5¼-in. drives. Large organizations typically have hundreds and even thousands of systems, all with 5¼-in. drives.

And there's the rub. Despite the inherent advantages of the smaller drives, migrating to 3½-in. drives is going to be a pain in the neck for users. And since exchanging disks is still the most common way of sharing data — despite the rapid growth in local-area networks — dealing with two disk sizes will be a problem for some time.

Complications

Don't get me wrong. The newer, smaller disks really are better, and converting to them won't be a major problem. It will, however, make things more complicated for a while. Users will appreciate all the help they can get.

Goleta, Calif.-based Manzana Microsystems, Inc. is an interesting new company with a product line positioned to help. Manzana makes a line of internal and external 3½-in. drives for the IBM PC, PC XT, AT and compatibles. These are packaged with software that supports a wide range of 3½-in. formats, including those of all the popular laptops.

Manzana has recently introduced drives, scheduled for availability in May, supporting the 1.44M-byte format of the new IBM Personal System/2 PCs. Manzana's products include an internal drive listing at $325, a host-powered external unit costing $475 and a self-powered external drive priced at $595. All are offered with the option of a copy of Design Software's very good Backup+ hard disk-to-floppy backup program. Manzana's drives come with the company's 3Five software package.

Installation of the Manzana drives, although manageable, is probably not a job for the casual user. Models for the IBM PC, XT and compatibles with a 37-pin D connector on the back are relatively easy to install. Use on the AT and various compatibles requires a multiplexer adapter card.

With the host-powered drive, installation on an AT or compatible requires a fairly complex installation. The A drive control leads ribbon cable and must be disconected from the AT disk adapter's J1 connector and plugged into the multiplexer card. A ribbon cable provided by Manzana connects the J1 port on the AT disk controller to the multiplexer card.

In addition, the DC power leads to the A drive must be disconnected and plugged in to a splitter that comes with the drive. One lead goes back into the A drive. The other plugs into the multiplexer card to power the drive.

If all this sounds a bit complicated, that's because it *is* a bit complicated.

Still, the result is well worth the trouble. Products like White Crane Systems Co.'s Brooklyn Bridge cable and software connection between an IBM or compatible system and a laptop are an economical way to bridge between 5¼-in. and 3½-in. systems for occasional use. Where frequent data exchange or conversion is required, however, the permanent addition of a 3½-in. drive like Manzana's offers a much better, if a bit more expensive, solution.

The folks at Manzana saw clearly that offering users products to ease the transition from 5¼-in. to 3½-in. disks was an excellent business opportunity. Their products have made data exchange with laptops easier for users for some time. Their new drives offer useful options for extending the life of 5¼-in. systems in a world that will increasingly be dominated by 3½-in. drives.

Zachmann is vice-president of research at International Data Corp.

IBM adds 3270 memory tricks

RYE BROOK, N.Y. — IBM has unveiled an enhancement that allows users to move its 3270 Emulation Program Version 2.0 in and out of memory on the company's recently announced Personal System/2 series.

The 3270 Emulation Memory Management Enhancement swaps information in and out of memory through The Software Carousel from Softlogic Solutions, Inc. in Manchester, N.H.

The Software Carousel is a virtual manager that is said to allow users to access and load 10 640K-byte application programs concurrently.

The enhancement program works directly with The Software Carousel's application program interface, a spokesman explained. While the 3270 Emulation Program is swapped out to the disk, the resident Enhancement Program code stores any data it receives and passes it back to the Emulation Program when it is brought back into active memory.

The Enhancement Program also reportedly allows Emulation Program users to run up to four sessions concurrently in four separate Software Carousel partitions. It costs $20 and will be available from IBM on May 1, the company said.

How to jump

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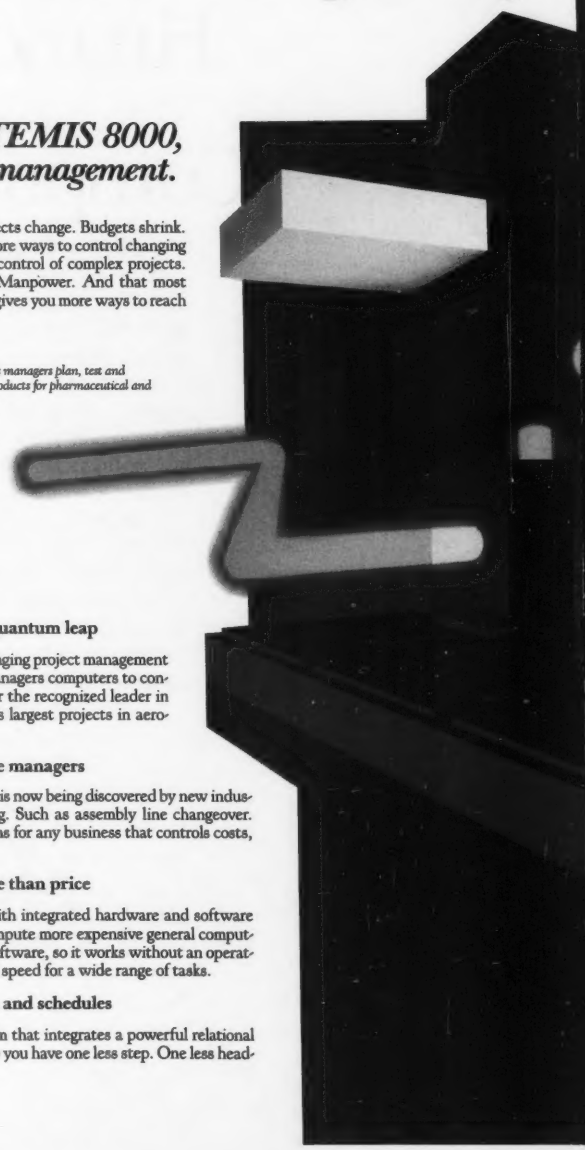

Project management takes a quantum leap

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The success of ARTEMIS in traditional areas is now being discovered by new industries. In applications beyond project planning. Such as assembly line changeover. Software development. Research. Applications for any business that controls costs, resources and time.

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ARTEMIS 8000 is a super minicomputer with integrated hardware and software designed for multiple users "tuned" to outcompute more expensive general computers. Advanced hardware is integrated with software, so it works without an operating system, giving you unmatched power and speed for a wide range of tasks.

The database relates and schedules

ARTEMIS 8000 is the only dedicated system that integrates a powerful relational database and project scheduler in one unit. So you have one less step. One less headache. One less cost.

'Brute force'

CONTINUED FROM PAGE 35

Often, organizations simply purchase a bigger minicomputer or a mainframe. But MIS Vice-President Tim Jannsen, who came on board 2½ years ago, was convinced that the company could operate more efficiently through the use of distributed processing rather than "brute force." If one link in the network failed, the rest of the network could continue operating. Also, by supplying IBM Personal Computer XT-compatible systems to the franchises, Jannsen could be assured of maintaining uniformity. It would also be relatively easy to add new franchises.

The 32 franchises currently serve some 95,000 customers at 104 fuel stations that are open 24 hours per day. Attendants are not needed, as the pumps are activated by credit cards in much the same way as automated teller banking machines. The difference is that the pumps do not communicate on-line with a central computer.

Some history: In 1978, Pacific Pride's predecessor switched from a key-lock system on its self-service pumps to a card-lock method. Each site's transactions were recorded on magnetic tapes, which were brought to the central office every few days for transferal to 8-in. floppy disks on an IBM System/34. In 1982, the company started sending the data over telephone lines via a polling method and decided to purchase the Series/1 because the system was "a natural" for communications, Jannsen explains.

By this time, the Apple Computer, Inc. Apple II had become fairly popular and the IBM PC had been on the market for a year. The company considered installing personal computers to do the job, but "the confidence level in micros at that time was not there," Jannsen says.

The company paid about $50,000 for custom designed software, and the system worked well enough until Pacific Pride started taking on separately operated franchises. Then, each franchise was responsible for its own station-to-office communications as well as setting prices and billing its own customer base. The problem was that a card holder with Franchise A might stop for fuel at a station owned by Franchise B, D or any other affiliate. The task was to get all the transaction and credit information routed to the appropriate franchise in an expedient manner.

Pacific Pride took the job of switching the information among the franchises, but unfortunately the systems that the franchises already had in place did not match. Separate franchises had Computone Systems, Inc., Datapoint Corp. and Data General Corp. systems — even an IBM PC XT — but not Series/1 systems.

As a result, the Pacific Pride staff had to manually call each franchisee to have him send the data. Since it had grown accustomed to automatic polling, communications became a cumbersome chore for Pacific Pride: It was difficult to switch the information in a timely, regular manner. "That sort of environment was just not going to work," Jannsen recalls.

In late 1984, Jannsen decided that outfitting every franchise with an IBM PC XT or a compatible system from Compaq was the best way to ensure control for each affiliate as well as networkwide reliability. The largest single expense was $100,000 for custom-designed software written in Ryan-McFarland Corp.'s RM/Cobol. The franchises use a mix of Compaq Plus portables, Compaq Deskpro systems and IBM PC XTs. Communications are handled by Hayes Microcomputer Products, Inc. modems and Blast software from Communications Research Group.

Each franchise's controller personal computer system uses an identical method of collecting data from the fuel vending machines. The "switcher" personal computer at Pacific Pride's Salem headquarters automatically polls each controller twice daily for information pertinent to other franchises. After it finishes the polling process, it makes another round of calls to feed individual franchise information back to the appropriate controllers. In February, the personal computer at the Salem office switched about 40,000 transactions among franchises — as much as one-third of the total volume, Jannsen estimates.

For the sake of uniformity, Pacific Pride purchases the systems and supplies them to the franchises at cost. "We're not in the computer business, we're in the petroleum business," Jannsen says.

Planning expansion

Jannsen says he plans to add as many as 30 franchises to the network this year. While the company is expanding rapidly and may soon be going nationwide, Jannsen claims that distributed microcomputing will be able to handle the load for the foreseeable future. His plan is to distribute the operations even further by setting up switching nodes that will in turn call a master switcher. The first such master switcher will be installed this summer, he says.

At least one competitor uses a Tandem Computers, Inc. fault-tolerant system, but Jannsen says such a system is not necessary for his company because the transactions are not made on-line.

Jannsen adds that people are sometimes shocked to see a personal computer driving what might seem to be a rather complex network. "'Where's the big mainframe?,' they ask. 'Where's the big momma that does all the work?,' " Jannsen recalls. But he stresses that the network is actually "very simple, very straightforward."

to conclusions

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TAKE CONTROL WITH METIER Artemis 8000

Say 'good buy'

CONTINUED FROM PAGE 35

some DOS 2 family's bugs. This is silly as well as costly for users not involved with networking.

When minimum price and maximum ease of use with modest-size problems constitute your decision criteria, ZBasic is the choice. For price, power and Microsoft compatibility, take a look at Quickbasic. Both are highly recommended.

For users of Quickbasic, IBM Basic or Microsoft's Basic compiler 5.36 who want slick and refined final-user interfaces with fancy displays, menus, high-speed screen writes and large data capacity, there is Microhelp's Mach 2.

With Mach 2, the screen writes are many times faster than the GW-Basic standard. Windows can be opened with graphics characters with an ease that is amazing, and they can be made to explode, move or pop up just as easily. Data handling limits become a straightforward matter of machine memory size. DOS file operations come — at last — to Basic, and just about anyone can use large graphics-generated characters to add emphasis to displays.

The down side of Mach 2 is largely not Microhelp's fault. The system uses direct access to hardware to improve speed, and this selection always reduces compatibility, at least a bit. The only other trouble I have with Mach 2 is the documentation, which much too frequently assumes excessive expertise on the reader's part. With good new documentation, which is promised by publication time, the system is recommended strongly.

Microhelp also has a Stayres system for Terminate and Stay Resident (TSR) programming in Basic and for DOS 3 family users an optional, extra cost, Lotus/Intel/Microsoft Expanded Memory Specification system that reduces TSR programs to only about 7K bytes of DOS. This is recommended for the careful or technically able user who needs or just wants TSR capability.

Although most modern Basic systems have some editing capability, a good text editor is important for any but the most elementary programming. Two professional systems are available in Compuview's VEdit Plus and Solution System, Inc.'s Brief.

VEdit, with which I have a lot of experience, is smaller than Brief. It is very fast indeed. The system is user configurable to a degree that is almost unbelievable, has moderately good on-line Help, which is also user configurable, has automatic virtual memory and can open up to 37 edit buffers. Brief can have as many edit buffers as hardware will support; it can edit megabyte files, although all writes must be user approved, and it has the best UNDO feature around.

Both editors support macro systems that are truly text-oriented programming languages. Brief's system is less cryptic than VEdit's, but Brief macros must be compiled, which adds considerable effort when bugs appear and need correction. VEdit's macros will run directly from the editor's command line but are quite cryptic in form.

A word of warning about these programs: They are for serious users. While VEdit has a Help file that gives all of the control key assignments, it may not have been entirely accurate in either the last version I examined or the present version. Brief's Help files are fixed and there is no Key-Help available to be grateful to have.

Both editors allow a great many simple and useful operations, but to learn to really use either takes time and application. When needed, these programs are strongly recommended, but be prepared to study and fine-tune them and/or your usage of them along the way.

Elkins is a Huntington, W. Va.-based computer and management consultant with a degree in electrical engineering.

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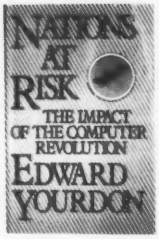

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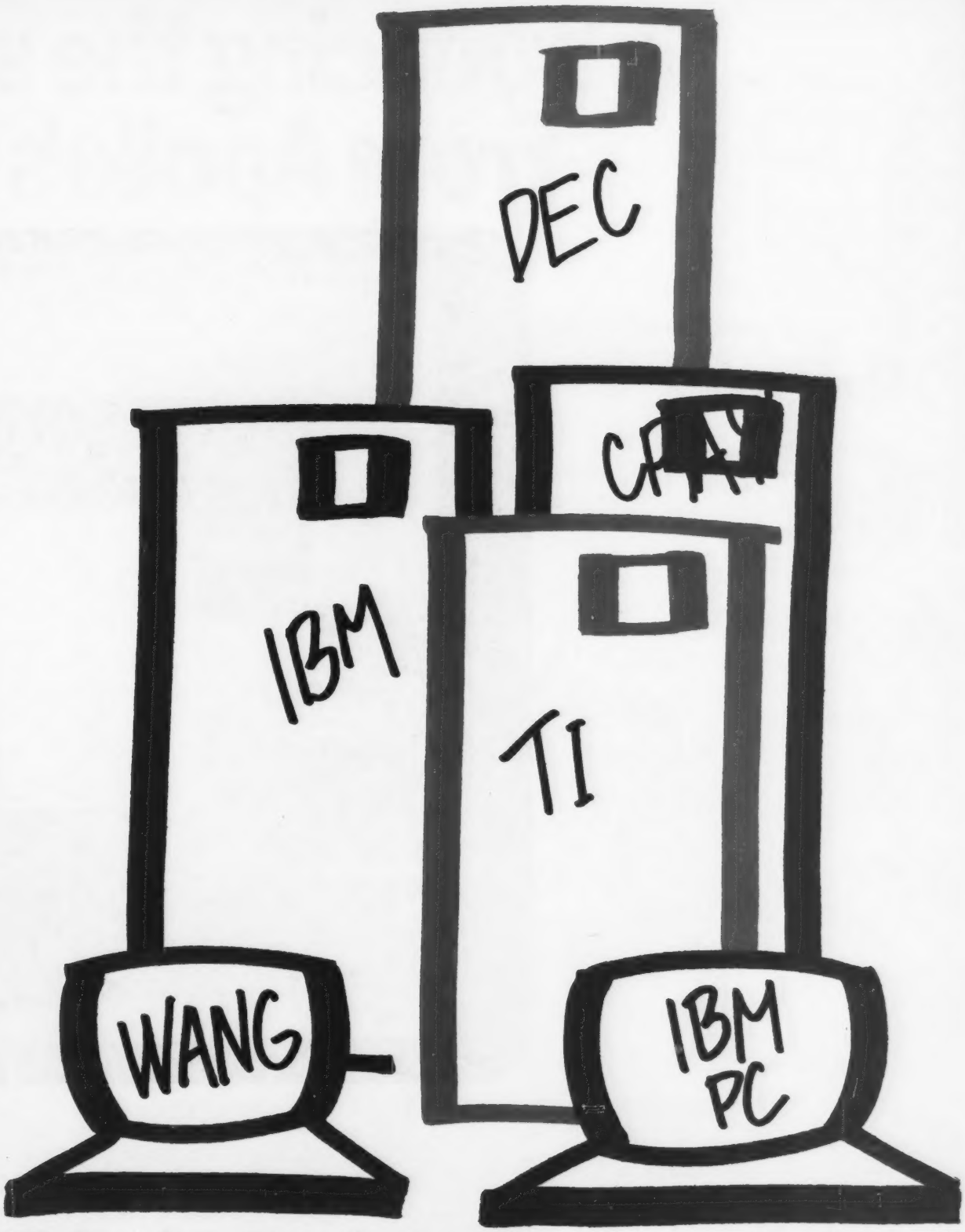

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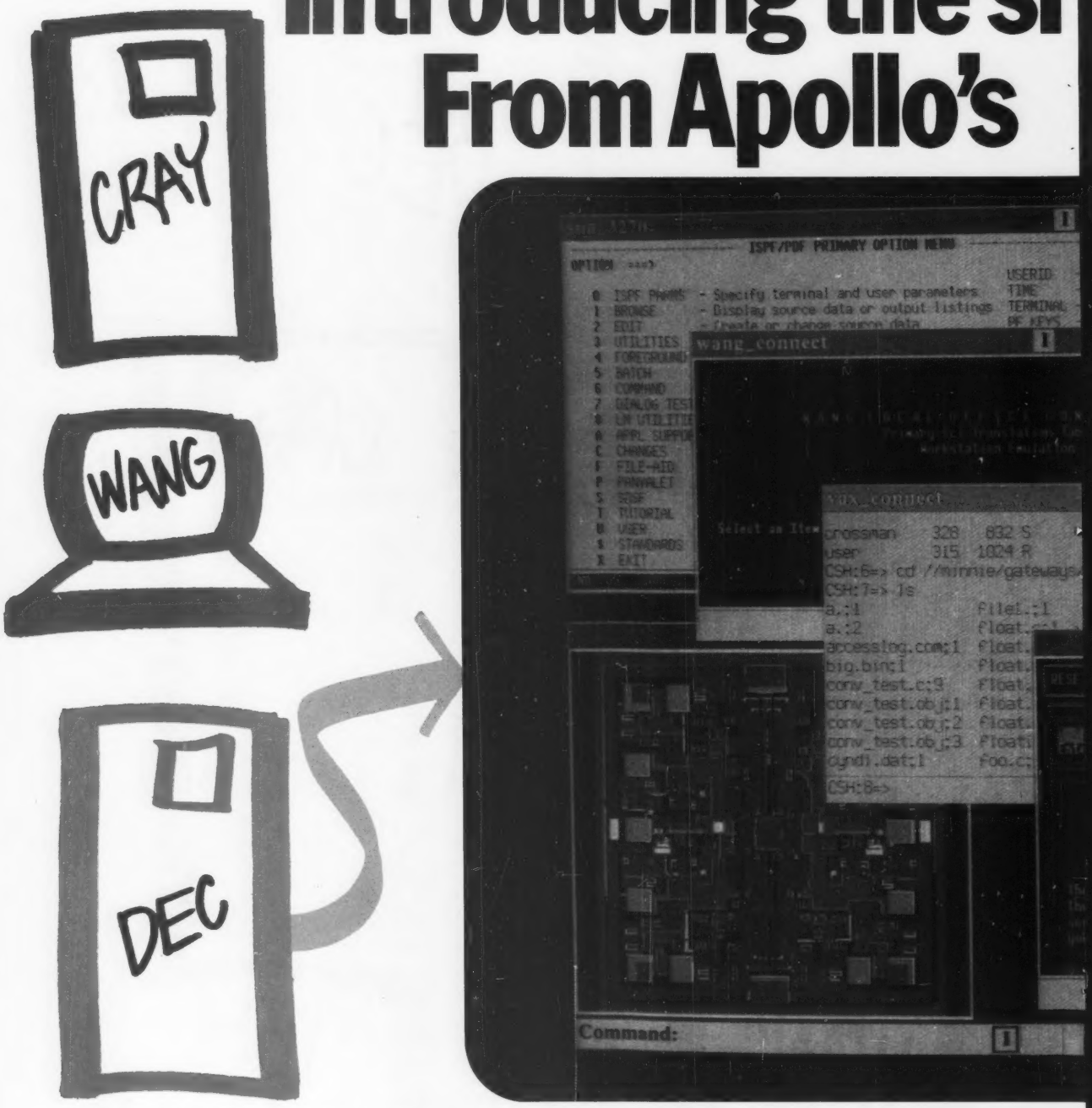

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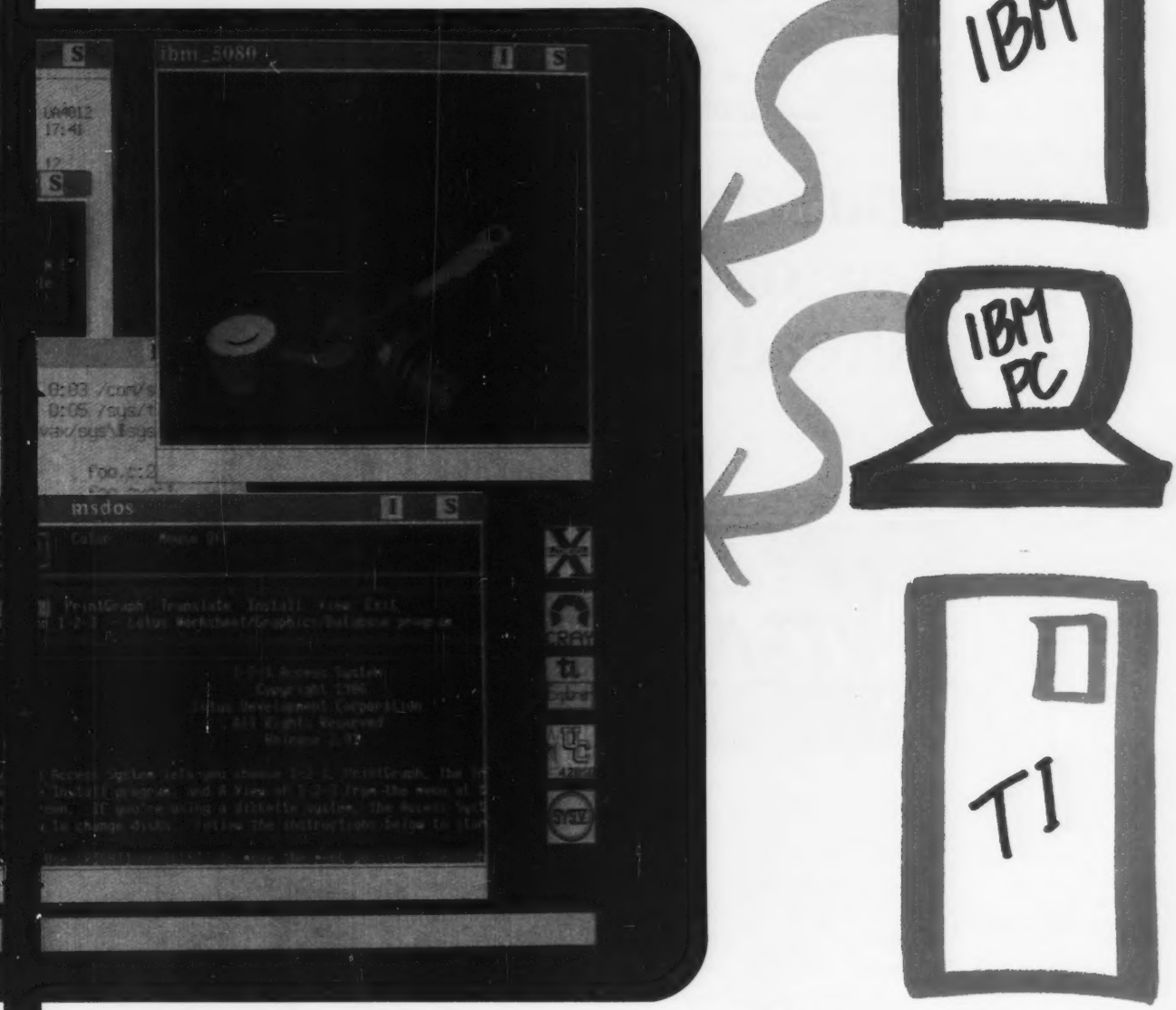

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NEW PRODUCTS

Systems

Lasodyne Corp. has announced the **Lasodyne System**, an integrated data and image processing document capture-and-storage and retrieval system.

The personal computer-based system is said to support up to eight users. It can combine data processing functions such as word processing and spreadsheets, image processing, archiving and desktop publishing at one workstation, the vendor said. It also can communicate with any IBM Personal Computer or Microsoft Corp. MS-DOS system.

A fully configured system features an IBM PC AT, laser scanner, hard disk, optical write-once-read-many-times disk or compact disk/read-only memory, a laser printer, an imaging PC board and software.

Lasodyne Corp.'s *integrated system*

Prices range from about $20,000 to $50,000, the vendor said.

Lasodyne, 2522-112 Chambers Road, Tustin, Calif. 92680.

Software applications packages

BV Engineering has announced **PDP**, a plotter driver program, and **PCPlot Version 3**, a screen and printer graphics program.

PDP is said to produce multicolor scientific and financial graphs on pen plotters. Data may be entered manually or imported from files generated by programs such as Lotus Development Corp.'s 1-2-3, Ashton-Tate's Dbase and languages such as Basic or Fortran.

Up to six plots from different files may be plotted on the same graph, according to the vendor.

PCPlot Version 3 creates linear, logarithmic plots as well as line graphs with error bars, stock market charts, bar charts and stacked bar charts.

PDP costs $72.95 and PCPlot Version 3 costs $95.

BV Engineering, Suite 207, 2200 Business Way, Riverside, Calif. 92501.

Laboratory Technologies Corp. has introduced **Labtech Acquire**, a data acquisition software package for the IBM Personal Computer and PC AT.

Acquire is said to support up to four channels of analog input and one channel of digital input. Incoming data can be time-stamped. Other features include linear scaling, triggering of a run and the ability to save and recall menu setups by name.

The program is said to support IBM Color Graphics Adapter, Enhanced Graphics Adapter and Hercules-type display monitors. Acquired data can be displayed in real-time within up to four independent screen windows.

Labtech Acquire costs $195.

Laboratory Technologies, 255 Ballardvale St., Wilmington, Mass. 01887.

Telecom Resource Group, Ltd. has announced **TRG/IMS**, a software package designed for the management of telecommunications consulting firms.

The software is said to provide a project management function and generate reports on consultant activities for clients, billing activity and statistical information on performance. TRG/IMS operates on Ashton-Tate's Dbase applications software, allowing subsequent manipulation of resulting data bases. All activities can be preset in the software to provide details such as network orders and contract negotiations.

TRG/IMS is priced at $5,500.

Telecom Resource Group, 1035 E. State St., Geneva, Ill. 60134.

AST Research, Inc. has announced that its OCR System's **Readright** optical-character recognition software is available for the AST Turboscan optical page scanner.

The Readright software is said to convert scanned text into ASCII text files to enable character recognition. According to the vendor, it reads documents as delivered so no modifications are necessary. Readable character sizes range from six to 12 points. Readright tolerates a pitch of 10 to 15 char./in. and maximum vertical line spacing of 8 line/in. It can also read reduced and enlarged photocopies, and fonts can be mixed on a single page.

The Readright software for the AST Turboscan is priced at $695.

AST Research, 2121 Alton Ave., Irvine, Calif. 92714.

PBI Software, Inc. has introduced **Visualizer IIe**, graphics software for the Apple Computer, Inc. Apple IIe and IIc computers.

Visualizer IIe is said to directly utilize Appleworks spreadsheets to produce a variety of graphs. It is said to be able to

Continued on page 46

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THE ANALYST WHO KNEW TOO MUCH.

What drove this man to build a spreadsheet 1,000 lines deep?

Recently, a financial software ad appeared in the Wall Street Journal under the headline: "When I told my friends about this ad they said, don't do it, Bob." It featured C. Robert Tully, a 15-year chief financial officer of the Celanese Corporation, and it caused quite a stir.

We can still send you a copy of that ad if you missed it. (Just use the coupon.) But today we'd like to share with you the story of a Fortune 500 company that uses the product Mr. Tully risked his reputation over.

It is a story well worth reading. It will help you answer questions your CFO will probably ask you. It could help you save your company money. And it could help you rescue your company–like the MIS executive below did for his–from "the analyst who knew too much."

You will also learn about a new advanced financial software product called FASTAR, which was developed by Corporate Class Software, a subsidiary founded by the $3 billion Celanese Corporation.

Here's what happened.

The vice president of finance for a $2 billion-plus manufacturing company was worried. He had learned one of his analysts had created a monster spreadsheet 1,000 lines deep, and growing deeper by the day.

Could that be the reason for the slow analysis in his department, he wondered? Every request seemed to stall. An ad hoc request for year-to-year cost comparisons took a full day. A day! By then decisions had already been made and other problems needed attention.

What would happen if the company added a new division, he asked? Or assigned more product lines to an analyst? How much time would be lost?

TROUBLE, TROUBLE, TROUBLE.

A call to MIS was sent out for help.

The MIS chief had been around long enough to know that the monster spreadsheet was just the tip of the iceberg.

Like most companies, financial data was spread out among the divisions of the corporation. And different departments used different formats to store the data. As a result, analysts had a difficult time accessing needed data quickly.

To make matters worse, financial analysts had created their own data empires on PCs, and many had built elaborate and shaky programs with macros. (Though none so huge as the 1,000-line monster. "It was hideous," said one programmer who saw it.)

What would you have done in the MIS executive's position?

As one observer put it: "They saw that they were heading down a funnel."

A DRAMATIC DISCOVERY.

The way out came from a company called Corporate Class Software.

This company had developed a product known as FASTAR–Financial Application Solution to Analysis and Reporting–that was the first *packaged* solution to *advanced* financial applications.

No fourth generation languages were needed to perform advanced financial applications. No macros were necessary. And all data from FASTAR could be loaded onto Lotus 1-2-3 spreadsheets for work there. (Yes, we'd be skeptical too. You'll find out how all this was done in a minute.)

When the decision was made to test FASTAR, the same ad hoc cost comparison that once took a day, now took minutes. Minutes!

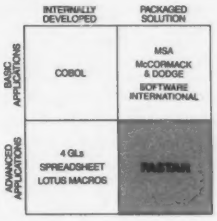
What's more, the company now had the flexibility to assign new divisions and product lines to analysts without taking time to reprogram the system. FASTAR is built to expand horizontally (for companies) and vertically (for products). In virtually unlimited numbers. The MIS executive was so impressed with FASTAR, in fact, that he now uses it to manage and analyze information from the more than 10 cost centers in his own department.

How could all this be done?

A PRODUCT THAT ALMOST DEFIES DESCRIPTION.

FASTAR acts as a bridge between PCs and mainframe financial production systems, such as the general ledger.

But it is more than a bridge. It is a ready-made solution for advanced financial applications that organizes data the same way that analysts are used to working with it–by financial schedule (income statements, etc.), by organization entity (divisions, etc.), by period (day, week, month, etc.) and by type (any fourth type of data you choose such as actual, budget or forecast). With the proper clearances, analysts can access financial information from any financial schedule for any company in the corporate structure. And they can consolidate and analyze that information without ad hoc programming. (Our powerful analysis package is built in, so there's no fourth generation language or macros programming needed. Even analysts who are computer illiterate can derive the same benefits from FASTAR as anyone else.)



FASTAR is not a tool, but a ready-made solution for advanced financial applications, including financial consolidation and management reporting.

As a result, analysts can report more quickly, consolidate more accurately, and analyze more frequently than with conventional systems.

Another company found, for example, that year-end reports that used to be available in early April, just prior to the annual meeting with shareholders, were now ready in February. And consolidations that used to take two to three days now took hours–with more accurate content. (One way that we've made consolidations more accurate is through a rigorous system of data checks that automatically checks data integrity.)

BRING THE NUMBERS BACK WHERE THEY BELONG.

FASTAR also addresses the critical issue of data integrity and control.

Because FASTAR takes all programming off the spreadsheet, there are no undocumented programs to cause costly mistakes. (Think about the 1,000 line spreadsheet written by the analyst who knew too much. He was only looking for a way to speed his analysis.)

TIME TO PRODUCE FINANCIAL AND MANAGEMENT REPORTS
QUALITY INDEX* OF MANAGEMENT INFORMATION AND ANALYSES
*The quality index reflects the accessibility, accuracy, and pertinence of the information.

FASTAR is the packaged solution to advanced financial applications that can provide quantitative and qualitative improvements in your company's financial analyses.

FASTAR also eliminates the need for passing data back and forth on pieces of paper and having secretaries or analysts type them into spreadsheets. This reduces the number of potentially dangerous errors that can occur. And because all financial information is stored in FASTAR's data base, MIS executives regain control of critical data.

You also protect all of your company's investments. FASTAR accepts data from fourth generation language products and database management systems, as well as microcomputer applications. (None of the companies using FASTAR needed more than three days to adapt the program to their corporate needs.)

In the final analysis, MIS executives show themselves to be strategic thinkers by giving analysts a tool to be more productive. (Did you know that one company found that 85 percent of an analyst's time is spent just looking for data?)

LET'S TALK.

You can see why financial professionals are interested in FASTAR. And why the chief financial officer of a $3 billion company would put his reputation on the line.

But we think you have a lot of questions about FASTAR, too.

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CORPORATE CLASS SOFTWARE, INC.
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- ☐ Please send me PC World's review of FASTAR.
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Continued from page 44

produce pie, line, point, scatter, bar and three-dimensional bar graphs. Color is supported.

Other features include the ability to automatically scale and define axes, place titles and general text anywhere on the graph and review and display graphs exactly as they will look when printed.

Visualizer IIe is priced at $89.95.

PBI Software, 1163 Triton Drive, Foster City, Calif. 94404.

Software utilities

Natural Microsystems Corp. has announced **Watson Dbspeaker**, a voice processing utility for use with Ashton-Tate's Dbase III Plus.

Watson Dbspeaker is said to enable Dbase III Plus users to use digitally recorded voice messages with their data base files and access them from any Touch-Tone telephone. It also works with Watson Quickspeak to convert existing Dbase III Plus files into synthesized speech.

Watson Dbspeaker requires Dbase III Plus, an IBM Personal Computer or compatible, a Watson voice processing system and a hard disk.

Watson Dbspeaker is priced at $75. Watson Quickspeak costs $375.

Natural Microsystems, 9 Mercer Road, Natick, Mass. 01760.

Ultrasoft Innovations, Inc. has announced **Ultrascreen**, a screen enhancement program said to double the amount of information displayed on the Tandy Corp. Model 100/102 screen.

Ultrascreen provides the complete standard character set including graphics and international letters. It replaces the original 40- by 8-pixel grid with a 60- by 10-pixel display, thereby increasing the number of characters on the screen from 320 to 600 pixels. It also reduces the number of word-wraps.

The program is available on tape or diskette. It costs $29.95.

Ultrasoft Innovations, P.O. Box 247, Champlain, N.Y. 12919.

Software enhancements

Information Processing, Inc. has introduced a 10-user version of its **PC-Blis** multiuser operating system.

With the addition of an eight-port CTC Systems, Inc. multiplexer, PC-Blis supports up to 10-Blis/Cobol users. The main personal computer monitor has the ability to run both Blis/Cobol and DOS applications concurrently. Other options include a TurboVM option for faster throughput and a Blis-to-Blis communications option to allow the micro to communicate with another PC or with a Blis/Cobol minicomputer.

PC-Blis is priced at $800 plus $398 per user, with a minimum of two users.

Information Processing, 427 Whooping Crane Loop #1825, Altamonte Springs, Fla. 32701.

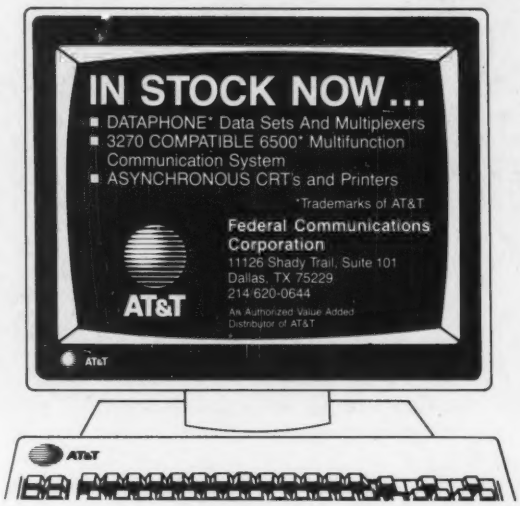
Matterhorn, Inc. has announced **PC/Hibol 2.0**, an enhanced version of the software said to combine the generation, testing and maintenance of IBM mainframe CICS/VS Cobol applications on the IBM Personal Computer, PC XT and AT.

Enhancements include the capability to allow existing mainframe CICS/VS applications to be brought down to the PC for maintenance or production.

Data dictionary capabilities have also been enhanced.

A trial system of PC/Hibol 2.0 costs $99.00.

Matterhorn, 9615 Girad Ave. S., Bloomington, Minn. 55431.



Turns Spaghetti Code COBOL Into Structured COBOL Automatically

SUPERSTRUCTURE takes your unstructured COBOL programs and automatically produces structured COBOL programs that are easy to understand and maintain. SUPERSTRUCTURE provides a simple and cost effective alternative to manually rewriting those unstructured programs that are a maintenance nightmare. Of course you can't believe it. Let us prove SUPERSTRUCTURE works, using your programs at your location. SUPERSTRUCTURE—the breakthrough you've been waiting for. Call today: Marketing Director—SUPERSTRUCTURE.

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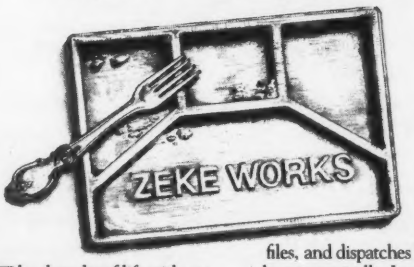
Why is Stouffers hot for Zeke:



The thought of life without Zeke automated scheduling gives Stouffers a chill. "Our operators rely on Zeke," says Data Center Manager Craig Kodat. "They don't want to go back to the old way of doing things.

"Zeke prevents out-of-order submissions, provides for automatic restart and restoration of files, and dispatches batch jobs automatically. It takes quite a burden off us!"

Faster throughput. Fewer reruns. Greater productivity. Zeke works for Stouffers.

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DATA STREAM

Elisabeth Horwitt

Everybody's doing packets

Trotting around the Las Vegas Convention Center floor during the recent Interface '87 conference, I found myself pondering the following loaded question: *Why* this sudden influx of packet-switching product introductions? The phenomenon I noticed is by no means limited to Interface, either. During the last few months, the market has been enriched by a wide range of new products and new participants, ranging from the Framingham, Mass.-based start-up Amnet to modem and T1 switch veteran Codex Corp. to several overseas vendors.

According to a February report from Salomon Brothers, Inc., X.25 packet switches and packet assembler/disassemblers (PAD) constitute one of the hottest growth areas in networking equipment, with a compounded yearly growth rate of 33% that looks as if it will continue through the decade (see chart page 52).

X.25 services are currently experiencing a 30% yearly growth rate, according to the

Continued on page 52

Northern Telecom links Appletalk

BY ELISABETH HORWITT
CW STAFF

LAS VEGAS — Appletalk-to-Appletalk links, dial-up Laserwriter access and shared hard-disk storage were among the capabilities that Northern Telecom, Inc. and Apple Computer, Inc. recently added to their jointly developed Apple Communication Framework.

Announced at the Interface '87 conference here, the enhancements constitute the second phase of the two companies' networking alliance, Northern Telecom said. The first phase, realized last fall, produced basic networking capabilities for Apple Macintoshes over Northern Telecom's SL-1 Meridian private branch exchange (PBX) network system.

One enhancement reportedly permits the Meridian SL-1 to connect individual Appletalk networks, which are linked to the PBX via Microcomputer Interbridges from Hayes Microcomputer Products, Inc., Northern Telecom said. The networks can be located up to 4,000 feet from an SL-1 over twisted-pair connections that support data rates of up to 9.6K bit/sec.

Northern Telecom also announced Memorybank 485, a 485M-byte formatted hard disk drive. Multiple Macintoshes can share the disk using Apple's Appleshare or an equivalent disk sharing program, such as TOPS from Centram Systems West, Inc.

Priced at $17,900, Memorybank 485 comes with an integrated tape backup system that can back up 75M bytes per cartridge at 5M byte/min., Northern Telecom claimed.

Local Bell readies ONA trials

BY DONNA RAIMONDI
CW STAFF

ST. LOUIS — Southwestern Bell Telephone Co. has announced that it will hold three trials incorporating Open Network Architecture (ONA) principles aimed at identifying how the firm will define and make available basic services to customers and other telecommunications service companies.

While ONA issues are far from settled — the regional holding companies have until February 1988 to submit the plans required by the Federal Communications Commission — Southwestern Bell is trying to forecast volume and usage requirements ahead of time, according to Logan Mayfield, staff manager of market development.

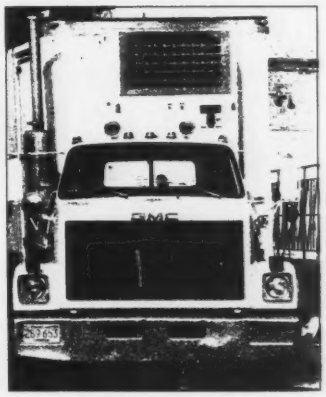
ONA is supposed to ensure that local networks are accessible to enhanced-service providers and users. In return, the re-

Continued on page 51

UPDATE

Truckers roll past EDI fog

BY MICHAEL SULLIVAN-TRAINOR
CW STAFF



Contrary to the rosiest claims of vendors, standards organizations and industry associations, electronic data interchange (EDI) is not fully capable of propelling its users into a paperless office environment. Not yet, anyway. A tangle of incompatible standards and proprietary EDI systems and company policies makes the elimination of paper all but impossible.

Fortunately, MIS in the trucking industry has managed to overcome these EDI implementation snags using traditional, readily available communications technology and standards that have been around since 1975.

"Back in the early '70s, people were using

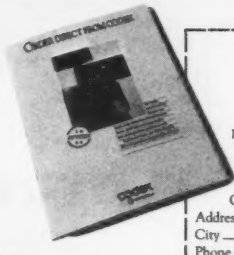
Continued on page 53

Inside

- Excelan, HP rev up net analyzer market. Page 48.
- Users ask FCC to take caution in AT&T deregulation. Page 51.
- Forest Computer adds HP-IBM interactive communications tool. Page 58.

Getting a Codex catalog is free. Not getting one could be costly.

Call 1-800-426-1212 ext. 218 to get your free catalog from Codex, the company preferred by more data communications professionals. No one can afford to be without the Codex Direct Order Catalog. It gives you information on our dial and leased line modems, statistical and time division multiplexers, tech control products, digital transmission devices, and more. Plus the catalog helps you make educated buying decisions by providing tutorial information and guidelines on everything from what to look for in a modem to the benefits of multiplexing. For your free year's subscription, fill out this coupon. Or call **1-800-426-1212 ext. 218.** But do it soon. For while it doesn't cost anything to get our catalog, it sure does pay to have one.



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Introductions fuel net analyzer market

BY PATRICIA KEEFE
CW STAFF

The network analyzer market picked up speed with recent introductions from Excelan, Inc. and Hewlett-Packard Co.

The Lanalyzer EX 5000E/S, said to be the first network analyzer for Starlan networks, was introduced by San Jose, Calif.-based Excelan. Starlan developer AT&T has endorsed this addition to Excelan's network analysis product family and said it is using the product internally as well as recommending it to AT&T Starlan customers.

The EX 5000E/S is said to include the ability to debug and analyze network applications and protocols on a local-area network (LAN), providing network system developers and administrators with a development and monitoring tool.

The EX 5000E/S can function like its predecessor, the EX 5000E, which allows analysis of an Ethernet network, and features the same menu-driven interface and ease of use, Excelan said.

With the product, users can capture up to 1,000 data packets per sec. or define a range of test criteria for each of up to eight channels to capture specific types of information about network operations simultaneously, including byte addresses or patterns, character strings or node addresses, Excelan said.

EX 5000E/S consists of Excelan's EXOS 225 Ethernet Analyzer Controller Board, Starlan Adapter Board and systems software installed in an IBM Personal Computer XT, PC AT or compatible, including AT&T's PC 6300. The Lanalyzer EX 5000E/S is available now for $9,995.

Palo Alto, Calif.-based HP announced two additions to its series of data communications test solutions for Systems Network Architecture and X.25 networks.

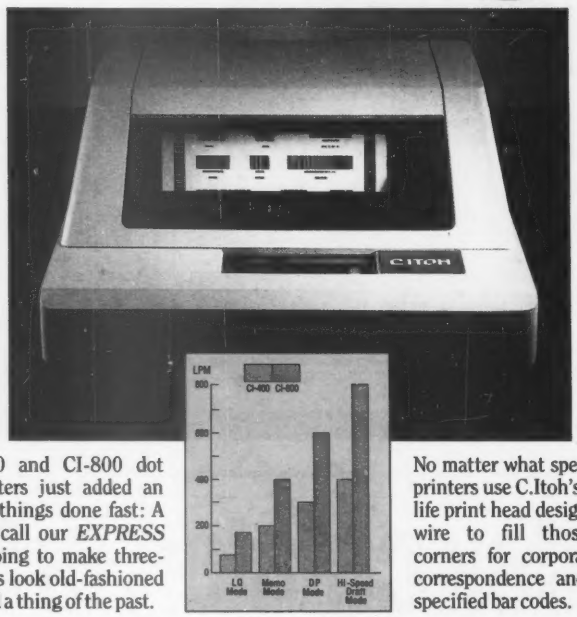
The HP 18300A, HP's X.25 network performance analyzer, provides the network manager with tools for managing small to medium-size networks. The analyzer opens a window into X.25 traffic by gathering performance information at speeds of up to 64K bit/sec., enabling early detection of network degradation.

The X.25 analyzer operates on the HP 4953A protocol analyzer. Extensive graphics and tabular screens display response times, error/incidents and efficiency.

The HP 18264A, HP's IBM Synchronous Data Link Control/Systems Network Architecture and X.25 High Level Data Link Contol link-level statistics package, focuses on protocol events that indicate faltering link conditions and determines problems without bringing the network down. Two bar-chart displays help troubleshooters spot problems.

The HP 18300A is priced at $1,200. It operates only with an HP 4953A protocol analyzer fitted with Option 001 extended memory and costs $14,150. The HP 18264A is priced at $500.

Four Lines.
No Waiting.



Our new CI-400 and CI-800 dot matrix line printers just added an extra way to get things done fast: A fourth speed we call our *EXPRESS* line. Which is going to make three-speed line printers look old-fashioned and awkward. And a thing of the past.

The four-speed CI-400 and CI-800 printers can print just about anything that your business needs. The CI-400, for example, prints out 400 lines per minute for high-speed data processing assignments. On the other line, tight and accurate letter quality at 85 lpm. In between you get 300 lpm for crisp, high-contrast bar codes and graphics, and a convenient 200 lpm memo mode.

The CI-800 takes four speeds even further. For even faster flexibility at 170, 400, 600 and 800 lines per minute.

No matter what speed's on line, both printers use C.Itoh's proprietary long-life print head design, and a small dot wire to fill those hard-to-reach corners for corporate letter quality correspondence and solid industry-specified bar codes.

All of which means you don't have to change lines to use one printer for one job and a different printer for another. Because the four speeds are all in one. Ready and waiting.

The new CI-400 and CI-800 line printers. You'll like our new line. In four different ways.

For more information on the CI-400 and CI-800, contact CIE Terminals, a C.Itoh company, 2505 McCabe Way, Irvine, CA 92714; or call (714) 660-1421 or our toll-free number (800) 624-2516.

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Avatar releases low-cost PC LAN

BY PEGGY WATT
CW STAFF

HOPKINTON, Mass. — Avatar Technologies, Inc. recently introduced the Alliance ZSL, a low-cost personal computer local-area network (LAN) that uses a distributed file server in star topology and does not require cards in each PC node.

The Alliance ZSL can connect up to 20 PCs and peripherals and link to the Digical Equipment Corp. VAX environment to provide a gateway to hosts, said James Sturtevant, Avatar's director of LAN development.

Each node connects to the hardware unit by an RS-232 serial port connection across eight-wire telephone-type twisted-pair cable using RJ45 and 25-pin connectors, said Neal Checkoway, Avatar marketing director.

The network software enables the user to run network operations in the background while working with application software.

The Alliance ZSL supports transmission speeds of up to 115K bit/sec. Networked nodes can exchange electronic mail and share printers and files. Two nodes cannot update the same file simultaneously, however, because the system provides no record-locking feature. Network management software controls device installations and node names and can also set password security.

Avatar's file-transfer software is compatible with Kermit, a commonly used protocol for communications among asynchronous mini and mainframe systems.

PCs on an Alliance ZSL LAN can connect to an Apple Computer, Inc. Macintosh to share the Apple Laserwriter printer and for basic asynchronous communications, Checkoway said.

An eight-node package is priced at $1,195. A 14-node package is $1,595 and a 20-node version costs $1,995. Alliance ZSL is available now. Each package also includes four 20-foot cables, three printer cables and a modem cable, Avatar said.

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IBM is a registered trademark of International Business Machines Corporation.
Macintosh, Macintosh II and Macintosh SE are trademarks of Apple Computer Inc.

MAC MAKES OFF WITH IBM FILES

It sounded like a phony claim.

An insurance company was transferring files to IBM mainframes coast to coast and all points in between.

Without using IBM PCs.

And it wasn't just text, it was spreadsheets and documents too.

One name kept popping up – MacMainFrame.

Turns out MacMainFrame is a micro-to-mainframe link. And it had Mac uploading and downloading data to IBM mainframes before you could say 3270 connectivity.

Mac IIs and SEs were also in on the action.

They all did a pretty good imitation of a 3270 terminal to boot.

And for MacMainFrame, CICS, TSO and CMS environments seemed like the old neighborhood.

It appeared the insurance company's story was rock solid.

But was it just another 3270 connectivity solution? Hardly.

Instincts said this one had Avatar written all over it.

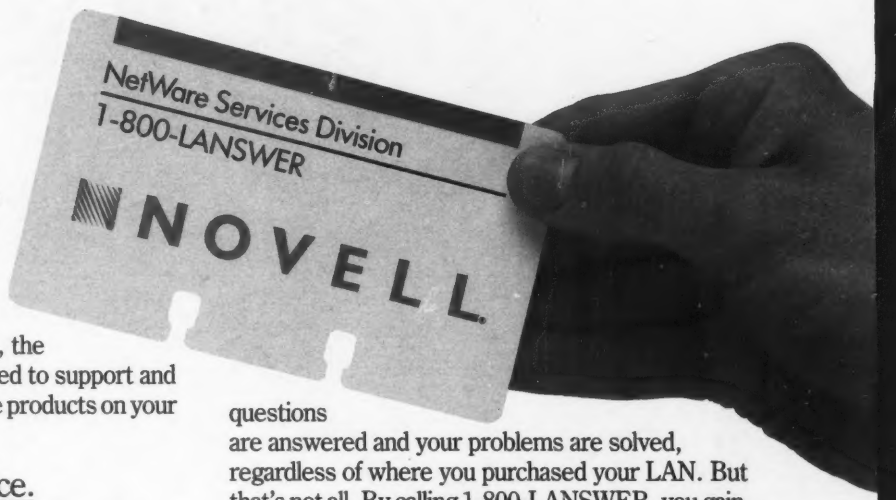
Avatar Technologies Inc.
99 South Street,
Hopkinton, MA 01748.

Avatar. All you need to know about 3270 connectivity.

617 435 6872

Avatar

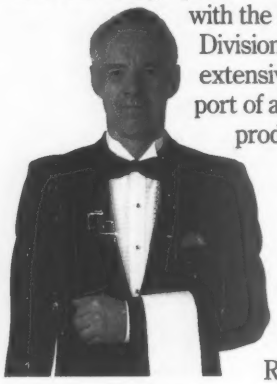
Novell Has A New Calling Card For LAN Service.



Our new calling card has one aim—to help you call on us when you have a question or problem with a LAN product. One phone call will put you in touch with our NetWare® Services Division, the branch of Novell expressly created to support and service all hardware and software products on your NetWare LAN.

At Your Service.

Novell dedicated years of hard work to the development of the networking industry's most innovative, high-performance LAN products. And with the NetWare Services Division, Novell has dedicated extensive resources to the support of all hardware and software products on NetWare LANs.



First-class service for your first-class LAN.

Always on Call.

When you call 1-800-LANSWER, anytime, day or night, you'll reach a NetWare Service Representative. The Service Representative will see to it that your questions are answered and your problems are solved, regardless of where you purchased your LAN. But that's not all. By calling 1-800-LANSWER, you gain access to the full range of services provided by the NetWare Services Division. Services like our 24-hour toll-free number, technical telephone support, on-site technical support and attractive service agreements.

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The NetWare Services Division has been called into action to meet the service and support needs of NetWare users everywhere. So if you have a question or problem concerning products for your NetWare LAN, contact the NetWare Services Division at 1-800-LANSWER. The number is staffed around the clock. And remember, the call's on us.

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Users urge caution in AT&T deregulation

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — What began as a narrow Federal Communications Commission proceeding to reduce tariff regulations may mushroom into broad deregulation of AT&T's profits and prices, concerned users groups say.

In recent filings to the FCC, both the International Communications Association (ICA) and the Ad Hoc Telecommunications Users Committee urged the commission to take a cautious, rather than sweeping, approach to deregulation.

"The commission should not let its zest for new [deregulation] approaches blind it to the need to proceed slowly, step by step, with frequent pauses to allow the market to adjust to changes and to assess the resulting competitive situation," the Ad Hoc committee said.

"The industry cannot be remade overnight, nor can competition be made effective simply by declaring or wishing it so," the committee added.

The comments were filed in response to the FCC's recent proposal to streamline tariff regulations affecting AT&T and the divested Bell operating companies in two areas: packet switching and contract services provided to large users via competitive bidding [CW, Dec. 22, 1986].

The FCC said tariff regulation could be relaxed because these markets are competitive and hinted that it would like to add to the list. In essence, the FCC said it wants to establish a regulatory framework with which it would assess the need for tariff regulation on a service-by-service basis.

But in the same docket, AT&T filed comments urging the commission to scrap that approach to deregulation and, instead, eliminate rate-of-return regulation, one of the basic tenets of traditional utility regulation. MCI Communications Corp., AT&T's rival in the long-distance market, agreed [CW, March 9].

Hoping for sympathetic chairman

Moreover, AT&T and MCI officials said they are optimistic that Dennis Patrick, the next chairman of the FCC, will be sympathetic toward their pleas. Patrick has expressed support for replacing rate-of-return regulation with a rate cap to protect the public.

The users groups said that although overhaul of rate-of-return regulation will be needed eventually, the current proceeding is the wrong place to start.

Concerning the pending docket on tariffs, the users groups said the FCC picked two good candidates for deregulation — packet and contract services — but added that the proposed regulatory scheme has serious flaws.

The ICA said one major flaw in the proposal is that it calls for reducing tariff regulation not only for AT&T, which faces some competition, but also for the regional Bell holding companies, which have monopoly control on their local transmission facilities.

ONA trials

CONTINUED FROM PAGE 51

gional holding companies will be allowed to offer enhanced services integrated into their local networks rather than through separate subsidiaries, as is now the case.

Attendees at the recent ONA Forum in Los Angeles applauded Southwestern Bell's efforts. Its trials are the only real-life situations laid out by the seven regional holding companies thus far that should allow development of a realistic list of the basic service elements — network building blocks — that the FCC wants filed in February 1988, according to Henry Levine, an attorney in Washington, D.C. Levine represented a number of large data communications users at the forum.

In February, telecommunications end-user organizations charged the holding companies with dragging their feet on ONA planning. The holding companies were expected to respond with preliminary plans at the forum, but most of their responses called for more talk between them and the enhanced service providers.

The following trials are scheduled:

- Secure Computer Access: A Texas oil company will use Southwestern Bell services to double security measures for employees with dial-up access to the computers. While the oil company's computer can already identify employees by password, Southwestern Bell will provide a second check by letting the computers identify the employees by telephone number as well. This trial has already started.
- Pay-Per-View Television: A cable television company will offer its customers a service whereby the customer dials a special telephone number and selects his choice of programming through the cable company computers. The information is routed through the cable company's billing and ordering systems automatically.
- Voice Gateway: Telephone customers could access voice menus and then digitally select information they want to hear — such as time/weather and stock market quotes — or be allowed to transact business such as buying concert tickets or checking bank balances.

WALKER HELPS KEEP THE PEACE AT CANFOR

"We're now producing consolidated financials a full week earlier, without special programming, changing cut-off dates, or adding resources."

Bill Galloway
Applications Support Analyst
Canfor Corporation
Vancouver, British Columbia

Relations have never been better between data processing personnel and accounting users at Canfor Corporation, Canada's $1 billion forest products producer.

The reason? "Walker financial applications meet the often conflicting needs of both groups," explains Bill Galloway, Applications Support Analyst. So even fiery tempers are tamed.

GOODBYE DATA PROCESSING DISPUTES:

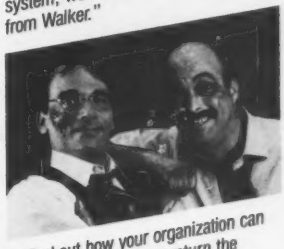
Twenty divisions, with separate sets of books, went into production simultaneously. "Many DP managers were skeptical about this working," explains Galloway. "In fact, installation and implementation went very smoothly, far better than anticipated."

Support for the company's evolving DP environment is an ongoing concern. "During system testing, we switched from IDMS to VSAM, without a problem. In six months," says Galloway, "we'll convert from DOS/VSE to OS/MVS. We're relieved Walker can support us in either environment."

HELLO USER CONTROL: Walker's accounting control key lets users change the data dictionary as needed. According to Galloway "essential data elements, such as division, cost center, location, mill, and section, can be represented with only one or two characters. With up to 50 user-definable characters available, almost any information can be accommodated efficiently."

Report turnaround has improved dramatically. "We delivered a budget-versus-variance report in a single afternoon, exceeding expected delivery time by a month," explains Galloway.

Galloway sums up: "Walker's flexibility, feature-rich products, and solid technical support give us a competitive advantage. If faced today with the decision of buying a financial software system, we'd certainly purchase again from Walker."



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Packets

CONTINUED FROM PAGE 47

Salomon Brothers report.

A steady 33% compound growth rate gets more impressive every year. Consider that the packet-switching equipment market, which was only $184 million in 1984, is expected to balloon to $809 million by 1989. And the question remains: What is making the technology so much more attractive to so many more businesses this half-decade when other markets — private branch exchanges, to name one — stay flat?

Packet-switching has been sold commercially for at least the last 10 years as a flexible way to link up a variety of computer systems in remote sites with built-in error-checking and rerouting functions. For sites that cannot cost-justify an in-house PAD and/or switch, there are on-demand packet-switching services from companies like Telenet Communications Corp.

Some of the advantages of packet switching are cumulative, paralleling its revenue growth. The commercial market has had 10 years to produce reliable equipment and agree on a solid X.25 standard that now enjoys wide support among computer, networking and service vendors. Better still, X.25 is among the most solid of the protocol suites that now reside under the Open Systems Interconnect (OSI) standard umbrella. In practical terms, if two vendors' products are X.25-compatible, then they will probably communicate without the need to call in an in-house programmer.

J. Michel Guite, a telecommunications analyst and vice-president at Salomon Brothers, cites several reasons for the market's current growth rate. First, he says, U.S.-based businesses are turning to X.25 as the only international telecommunications standard they can depend on to link up with their branches and business partners on the continent.

Guite also points to IBM's increasing support of its network packet-switching interface and related commitment to "fully embrace" packet-switching protocols into Systems Network Architecture.

The Bell operating companies' entries into the X.25 service market during 1986 represent a shot in the arm for both the packet-switching equipment and service markets, Guite says. Equipment sales benefit from the operating companies' up-front purchase of X.25 switches to support their services. And businesses should soon begin to realize that local X.25 services make a handy link between in-house PADs and long-distance public data network (PDN) X.25 services. Indeed, as long as the Federal Communications Commission forces the Bell operating companies to remain within their local access and transport areas, their X.25 services will probably stay complementary to, not competitive with, the long-distance PDNs.

However the vendors deal the cards, users will ultimately decide the fate of packet switching as they do other networking technologies: on the basis of whether it fills real application needs at an acceptable price.

X.25 networking should be within more companies' budgets, now that Amnet has fractured the entry-level price of a packet switch. The feisty start-up turned heads recently when it introduced a packet switch that uses existing IBM Personal Computer ATs and starts at $6,000. Other vendors are likely to follow suit; Bolt Beranek and Newman's low-end product, announced at Interface, has a bulkier starting price of $19,000, but still opens up opportunities to companies "with smaller networking needs," as one spokesman said.

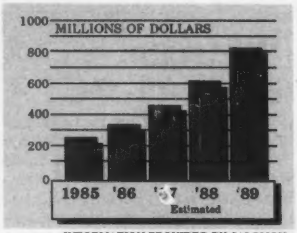
On the application front, packet switching should be helped along by the proliferation of local-area networks (LAN) in multisite organizations — and by companies' needs to link those LANs either to one another or to a corporate host. A growing number of PC LAN vendors — most recently Novell, Inc. and Banyan Systems, Inc. — have introduced X.25 gateways.

Applications such as those described above could play a major role in the packet-switching market's predicted growth rate, particularly if a mature OSI — not to mention Integrated Services Digital Network — provides better integration between how a packet is handled on a LAN and how it travels over a packet-switching wide-area network. After all, a data packet is a data packet. All the vendors have to do is come to an agreement about how they package and route it. Simple, no?

Horwitt is *Computerworld*'s senior editor, networking.

X.25 equipment sales on the rise

Packet switches, packet assembler/disassemblers to see 33% compound annual growth rate in U.S.



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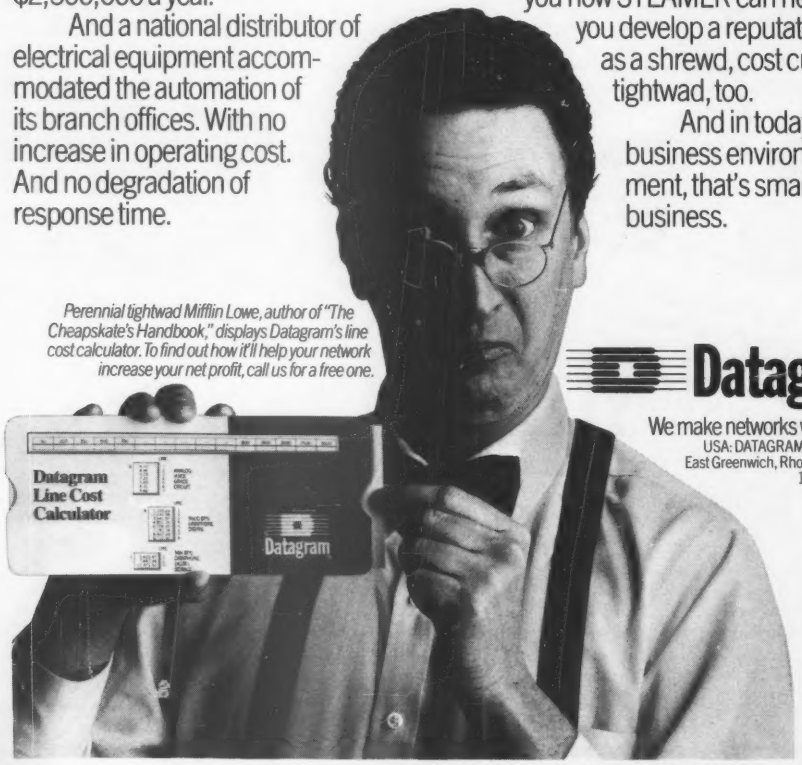

Perennial tightwad Mifflin Lowe, author of "The Cheapskate's Handbook," displays Datagram's line cost calculator. To find out how it'll help your network increase your net profit, call us for a free one.

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Truckers roll

FROM PAGE 47

this technology to communicate from the plant to the general office within one organization," says Bill Seeley, vice-president of MIS for Consolidated Freightways, Inc. in Portland, Ore.

"The only complexity you're adding is that now you're going between organizations. Before, there was one MIS group, and you could do it any way you wanted," Seeley says. "Now, the big feat is coming to some agreement on the standards. There's no technological magic to it."

Despite the relative simplicity of the technology, only about 60 trucking companies are officially on record as implementors of some form of EDI.

"It's like a diet fad," says Fred Muller, MIS director of Pennsylvania Truck Lines, Inc. in East Lancaster, Pa. "There are many people talking about EDI, saying, 'Gee, I'd better get into it pretty soon.' But there is more talk than there is action."

Organizational hurdles

There are not any technical obstacles preventing the implementation of EDI, but there are organizational hurdles to clear. On the MIS side, many managers, especially in small companies, are already struggling with backlogs of applications that have higher priority than eliminating paper handling systems that already work efficiently.

On the business side, there is a great deal of reluctance to give up paper and replace it with electronic data as the documentation for legal and financial transactions.

"MIS managers in trucking companies are waiting for a cue from marketing and sales before implementing EDI," says Lee Wintrode, president of Atlantic Beach, Fla.-based Synergistics Software Systems, which provides software and services to trucking firms.

'No justification'

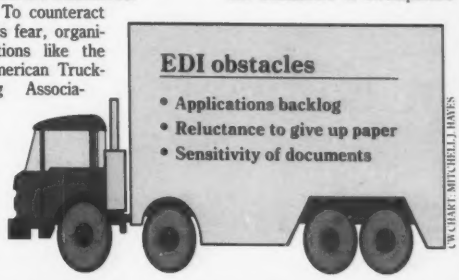
"They are waiting primarily because they don't have a justification for it," Wintrode says. "A trucker shop is like any other — when the manager looks at his projects, he may have two or three years' backlog, so he's not out looking for additional work.

"Also, EDI is an area that is somewhat scary, sort of a bogeyman concept. An MIS director isn't real anxious to get involved in it unless he has to. He likes to sleep at night, too," he adds.

What is frightening about EDI is the elimination of paper invoices, shipping receipts and freight bills that seem vital to both the trucking companies and their customers.

Another cause for worry is losing the portion of the paperwork that describes a legal contract between the trucker and shipper and that must be signed by the appropriate parties when goods are transferred.

To counteract this fear, organizations like the American Trucking Associations (ATA) are making confidence inspiring statements.



A recent ATA brochure proclaims, "EDI is the most important thing to happen to transacting business since the invention of the telephone!"

Motivators

Many may doubt ATA's statement. But there are three irresistible factors driving truckers to overcome their qualms about EDI:

- Customers are realizing the savings EDI can bring by preventing data entry errors and eliminating paper handling, so they are pushing the truckers to come on-line. This sometimes takes the form of ultimatums: "Either you adopt EDI, or we'll find another carrier."
- Motor carriers recognize the savings that can be achieved in their own operations, and they see EDI as a marketing tool that they can use to gain business.
- Other trucking companies — especially the large ones — have already implemented EDI and are using it as a selling point.

Despite an ATA survey that drew only 60 respondents who said they were running EDI transactions, industry experts and vendors estimate there are several hundred more truckers accomplishing EDI.

"Implementing EDI is very innovative. You won't see an overnight conversion by all of the hundreds of carriers that are out there," says Edward Gilbert, president of the Transportation Data Coordinating Committee (TDCC), which sets EDI standards for the transportation industries.

"The large carriers are implementing EDI first, and as the benefits to both the shipper and the carrier are identified, it will grow," Gilbert says.

EDI tools being delivered

As the truckers begin to get serious about EDI, vendors are moving to provide products before each trucking company develops its own communications program.

Leading third-party vendors such as McDonnell Douglas Electronic Data Interchange Systems Co., General Electric Information Services Co., Kleinschmidt, Inc. and Transettlements, Inc. provide complete EDI services; these firms act as the translators of incompatible data formats.

A third party will accept a trucker's EDI transmissions and convert them to whatever formats the shipper requires and vice versa.

In addition, companies such as Orion Communications in Atlanta and Synergistics Software are developing software that is intended to facilitate the transmittal of bills of lading — the source document for most freight shipments — in the appropriate TDCC formats.

In the meantime, trucking companies are implementing EDI transactions in whatever manner they find suitable.

> "EDI IS LIKE a diet fad. There are many people talking about it, saying, 'Gee, I'd better get into it pretty soon.' But there is more talk than there is action."
>
> FRED MULLER
> PENNSYLVANIA TRUCK LINES, INC.

Consolidated Freightways, a $2 billion nationwide trucking company, has been running EDI transactions for seven years. The company maintains a flexible system that meets the shippers at whatever level of EDI implementation they can handle (see story left).

EDI transactions include sending customers electronic images of freight bills, receiving remittance advice messages back from shippers and providing shipment status messages in response to inquiries. Some 2,800 customers dial in for shipment status information; eight organizations receive freight bill images. A few customers also participate in transmitting bills of lading and electronic payment.

To implement EDI, Consolidated Freightways spent be-

Continued on page 55

Ups and downs of maverick's role

BY KELLY SHEA
CW STAFF

An electronic data interchange (EDI) pioneer of 10 years' standing, K Mart Corp.'s decision not to wait for industry standards has brought benefits — as well as occasional conflict with business partners reluctant to commit to the retail giant's proprietary protocols.

According to Gary Sweetapple, senior director of corporate systems development, K Mart's involvement with EDI predated the development of EDI standards. "We understood its potential in the mid-1970s and decided to embark on an electronic data interchange course ourselves," Sweetapple says.

So the Troy, Mich.-based discount general-merchandise retailer developed proprietary transmission software and protocols and, in 1976, began transmitting purchase-order information with two menswear vendors. A year later, K Mart started receiving electronic invoice data from a limited group of vendors. "By the early 1980s," Sweetapple says, "we had in excess of 500 vendors — approximately a third of our corporate-dollar volume purchases."

In time, industry associations developed public standards, but K Mart chose not to adopt them in the early stages because the company felt the standards were not yet comprehensive enough for its needs, Sweetapple says.

Today, the 2,200-store chain and its subsidiaries maintain EDI relationships with more than 800 vendors — such as Duracell, Inc., RJR Nabisco, Inc., Casio, Inc. and Cannon Mills Co. — and several trucking companies, including PIE Nationwide, Inc. and Consolidated Freightways, Inc. While most of the current electronic give-and-take is conducted by the proprietary formats, K Mart initiated its trucking EDI transactions — mostly freight bills — by purchasing the Transportation Data Coordinating Committee's standard software.

K Mart's Sweetapple

In addition, the company has begun communicating with some vendors using the grocery industry's EDI protocol — the Uniform Communication Standard, developed by Uniform Code Council, Inc. K Mart says it also plans to support a subset of the American National Standards Institute's X12 generic business data interchange standard.

The retailer's proprietary setup works from company mainframes — the IBM 3090 Model 200 and the IBM 3084 Model Q — and various communications controllers. The participating vendors need not buy specific or compatible equipment, but they must develop the K Mart standard translation software. The development process includes vendors traveling to K Mart headquarters to learn formats.

Does the proprietary nature of the program hinder K Mart's EDI partnerships? Usually not, Sweetapple says, though he admits acceptance can be a rough spot.

"One of our very largest vendors has consistently refused to become involved in EDI with us because they believe that accepting a K Mart private format would somehow sabotage their efforts to operate in a standards-oriented environment," he says.

And K Mart respects that opinion. The $24 billion company has not taken the position, "If you're not going to do EDI, then we can't trade with you," especially with smaller vendors for whom the expense of software development or buying a computer just for EDI would be too much to justify its use. "We have to use good business sense as we implement EDI," Sweetapple says.

But, he adds, "There will come a point in time at which it will become a requirement, especially for our larger vendors, to be able to trade electronically with us."

Shea is a *Computerworld* assistant features editor.

Retire Your PC Coax Connection

The PC-to-host coax connection. She was a good piece of equipment working with coax cable and cluster controllers, but time just passed her by. End users started needing more than simple host access. They also needed their PCs to share resources around the office. That's when local area networks came along to fill the need.

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Truckers roll

CONTINUED FROM PAGE 53

tween $40,000 and $50,000 in systems work and programming time and another $15,000 to $20,000 on hardware, according to Seeley.

The EDI activity is processed at the company's Portland, Ore. data center by one of two mainframes: an IBM 3081K or an Amdahl Corp. 5870. Each of the company's 900 freight terminals nationwide uses an IBM Series/1 or a Digital Equipment Corp. Professional 380 for local processing. In addition, there are 2,400 CRTs distributed throughout the firm.

To ensure data security, a DEC VAX-11/750 is used as a front end for the EDI sessions for the mainframes in Portland. IBM Remote Job Entry 2780 and 3780 protocols are used for the communications sessions, and TDCC and American National Standards Institute X.12 standards are used for data content.

'No big feat'

"It was no big technical feat," Seeley says. "We'd been involved in communications for some time. There were some problems in the communications linkage with the other party, but those were generally protocol-related."

Similarly, TCB, Inc., a Minneapolis shipper of specialty goods, is having little trouble using a Hewlett-Packard Co. HP 3000 Series 68 processor and homegrown software to handle all its EDI transactions with trucking companies, some of which use IBM equipment. TCB transmits bills of lading and receives invoices and shipment status messages. The data formats are based on TDCC standards.

TCB worked with PIE Nationwide, Inc., another large national motor carrier, to develop the EDI system at a cost of about $20,000. TCB Executive Vice-President Jim Wasserman estimates that the system is worth more than $100,000 a year to TCB because of the staff and paper handling time it saves.

Small firms gain, too

Because of the prevalence of the TDCC standards, small trucking companies are also reaping the benefits of EDI.

Coles Express, a $20 million Bangor, Maine, trucking company, is using EDI both to make its own operation more efficient and to collect a return on its investment by marketing its own software.

Based on an IBM System/38, Coles' EDI system is part of the firm's Motor Carrier Information System software package, which also includes accounting, load dispatching and equipment-maintenance applications. The shipping status and order-entry functions of the system can be accessed either through a voice-response system or a computer-to-computer connection.

Coles uses the BT-II voice-response system designed by Perception Technology in Canton, Mass. Perception gave the system to Coles in exchange for the development of an interface to the System/38. Coles' programmer, Albert York, designed the interface using Basic and added an IBM Personal Computer to the configuration to act as a protocol converter. Because the voice-response equipment was acquired at no cost, the company invested less than $10,000 to develop the system, York says.

Another PC and a modem are used for customers such as Bath Iron Works in Brunswick, Maine, to connect their computers directly to the Coles system and bypass the voice system.

Taking a less ambitious route to EDI, Bill Brandt, secretary/treasurer and unofficial data processing manager for Ozark Transportation in Poplar Bluffs, Mo., is relying on one of his largest shippers to develop Ozark's first EDI connection.

> "EDI IS somewhat scary, sort of a bogeyman concept. An MIS director isn't real anxious to get involved in it unless he has to."
>
> LEE WINTRODE
> SYNERGISTICS SOFTWARE SYSTEMS

The shipper, LTV Steel Corp., runs an invoice receiving system in Cleveland that has EDI links with 11 trucking companies. At the end of March, Ozark became No. 12.

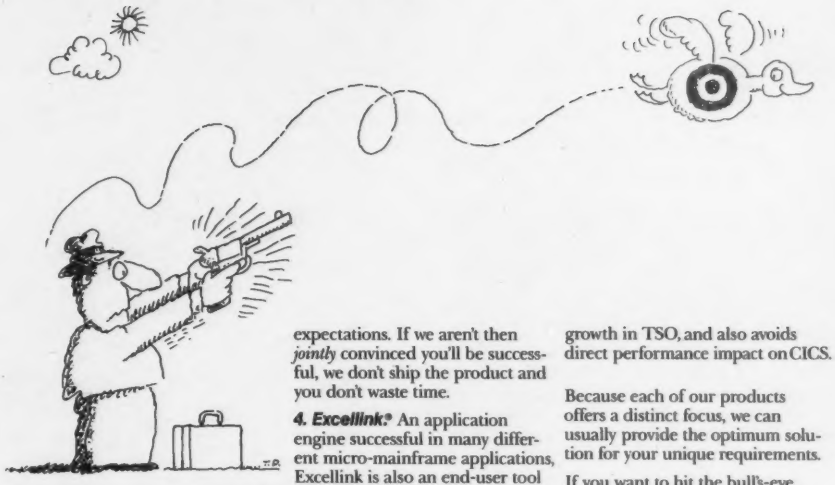
For Brandt, starting EDI means simply adding a 2,400 bit/sec. modem and a communications software package recommended by LTV to the company's IBM System/34. For a cost of about $8,000, Ozark can save up to eight days on the time it takes LTV to process invoices for payment.

Brandt says his future plans include additional EDI transactions, such as shipping status transmissions, and he has opened discussions with another one of Ozark's shippers to set up an EDI system.

"EDI is coming. The people that get involved in it now are going to be in the forefront, but I don't think anybody who is not in it today has missed the boat. It will be several years before it will be a real common thing," Brandt says.

Sullivan-Trainor is a senior writer for *Computerworld*.

Does Your Micro-Mainframe Application Look Like A Moving Target?



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Packet-switching dominates Interface

BY ELISABETH HORWITT
CW STAFF

LAS VEGAS — Encouraged by the solidification of X.25 standards and burgeoning user demand, a slew of vendors announced packet-switching products at the recent Interface '87 conference here.

BBN Communications Corp. in Cambridge, Mass., unveiled low-end additions to its packet-switching product line, aimed at "companies with smaller companies just starting to get into packet switching, as well as large companies with small X.25 applications," said Joseph Hitt, BBN vice-president of sales.

The C/3 Packet Switching Node is an X.25 switch/concentrator that supports 125 data packets per sec. as an access device and 300 data packets per sec. throughput for tandem traffic. The maximum 12-port configuration handles two 64K bit/sec. and 10 19.2K bit/sec. ports. Priced at $19,000, the vendor said the product will be available Oct. 1.

BBN also announced the C/7 Network Operations Center, an entry-level member of its network-management product family designed to provide monitoring and control capabilities for networks of up to 16 BBN packet-switching nodes. It reportedly is two-thirds the price of the C/70 Network Operations Center and can be field-upgraded to the larger system, BBN said. The C/7's $125,000 price tag includes a 340M-byte hard disk drive. Availability is scheduled for May 1.

Allows hot-keying

NCR Comten, Inc. in St. Paul, Minn., introduced Comten Display System Manager (DSM), a software package within its Extended Connectivity/3270 offering. Running on one of Comten's mainframe communications processors, DSM is said to allow a terminal to hot-key between applications on one or more IBM or non-IBM hosts.

DSM also supports the Display System Protocol, X.25 packet-assembler/disassembler (PAD) software that allows attached terminals to access an X.25 network through the processor. Scheduled for fourth-quarter availability, DSM annual license fees range from $1,650 to $4,950, depending on the Comten Communications Processor model.

Doelz Networks, Inc. in Irvine, Calif., announced an expansion card that adds X.25 packet switching to its Esprit One virtual-circuit switch. Up to 1,024 virtual circuits can be switched through a single X.25 interface module and routed through the Doelz network to host processors, PADs and X.25 public data networks, the vendor claimed.

Card-by-card addition

The X.25 switching can be added on a card by card basis up to a capability of 30K to 40K packets per sec., Doelz said. Each card supports up to eight RS-232 connections at 9.6K bit/sec., or four 19.2K bit/sec. links or two V.35 64K bit/sec. links.

Scheduled to be available in the fourth quarter this year, the X.25 switching capability is priced at $9,950 per card plus a one-time $5,000 software license fee.

Telematics International, Inc. in Fort Lauderdale, Fla., introduced a line of Programmable Communications Processors that provide asynchronous and IBM Synchronous Data Link Control access to the vendor's Net 25 packet-switching network system. The processors can act as network concentrators, packet-switching nodes or control centers. The low-end Series 200, priced at $15,000, supports up to 32 lines and is scheduled to be available in June. The mid-range Series 600 includes a 10M-byte hard disk and comes with 18 communications channels. Priced at $43,000, the vendor said it will be available this month.

Telematics also introduced Async-XS, Net 25 software that is said to enable the Telematics Network Control Center to remotely control, configure and collect statistics generated on asynchronous links. The package is scheduled to be available in July.

Telematics subsidiary PCI, Inc. introduced Smartview, an IBM Personal Computer AT-based network mangement system for PCI's Smartnet line of PADs, switches and switching PADs. Running under Microsoft Corp.'s Xenix, Smartview accesses PCI X.25 devices for collection of diagnostic and usage statistics and for remote configuration. Available now, the system is priced at $1,750.

PCI also announced Smartnet 3600, a switching PAD that reportedly transmits up to 100 packets per sec. Designed to concentrate traffic from other Smartnet processors, Smartnet 3600 is available with combinations of up to 24 asynchronous ports and four X.25 links with data rates of up to 64K bit/sec. A configuration priced at $6,150 supports dual X.25 links plus eight asynchronous ports.

A third PCI introduction, the Smartnet 1200, is a Systems Network Architecture host PAD that is said to enable an IBM SNA host to communicate over an X.25 network at rates of up to 9.6K bit/sec. It can also interface with IBM System/34, 36 and 38 hosts. The Model 1201-1 with one X.25 link, one SNA/SDLC port and one asynchronous diagnostic port is priced at $3,200 and is available now.

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NEW PRODUCTS

Local-area network hardware

Communication Machinery Corp. has announced the **Prism** line of multifunction intelligent front-end processors featuring IEEE 802.3 Ethernet and X.25/Defense Data Network (DDN) on a single board.

The initial Multibus version of the board, called Prism-300, is said to provide the host system with an X.25 interface message processor interface to the DDN network.

Prism-300 features a 10-MHz Motorola, Inc. 68010 microprocessor for running protocol code and 512K bytes of dynamic random-access memory with parity and no wait states for code and message buffering.

The Prism-300 board is priced at $3,200.

Communication Machinery, 1421 State St., Santa Barbara, Calif. 93101.

Local-area network software

Essential Software, Inc. has announced its **Essential Communications Library** for the C programming language.

The library is said to allow programmers to communicate with any asynchronous device via the RS-232 port. It includes all source code and a manual with tutorial.

The Essential Communications Library costs $185.

It also comes bundled with Breakout, the vendor's on-line data communications monitor, for $250. Breakout alone costs $125.

Essential Software, 274 Charlton Ave., South Orange, N.J. 07079.

Network services

CCMI/McGraw-Hill Information Systems Co. has announced the **Centrex Planning Guide**, a reference for Centrex services in the U.S.

The three-volume set includes monthly updates. It includes information on central office equipment, trunks, lines and other Centrex features.

The guide also includes a history of Centrex, sample pricing, regulatory and technological developments, a how-to section and a glossary.

A one-year Centrex Planning Guide subscription costs $1,195.

CCMI/McGraw-Hill, 1221 Avenue of the Americas, New York, N.Y. 10020.

Customer-premise equipment

Natural Microsystems Corp. has introduced **Quickspeak**, an option for its Watson voice processing system.

Quickspeak is said to convert personal computer files into synthesized speech. It consists of software, documentation and a programmable read-only memory chip that replaces an existing chip on the Watson printed-circuit board.

Quickspeak responds to DOS commands entered from the computer keyboard or from any touch-tone telephone, the vendor said.

Quickspeak requires the Watson printed-circuit board, 384K bytes of random-access memory, a 360K-byte diskette drive and a hard disk drive. It costs $375. Watson costs from $498.

Natural Microsystems, 6 Mercer Road, Natick, Mass. 01760.

Prentice Corp. has announced the **Comm90 Series** of data communications equipment.

The Comm90 Series is said to be based on a distributed architecture that provides each system module with local intelligence.

The series includes the DX90 data private branch exchange, the MX90 switching statistical multiplexer, the PD90 X.25 packet assembler/disassembler and the LT90 local-area network terminal server. All units are said to be compatible.

Prices for the DX90 start at $4,600 for an entry-level 16-port unit and range to $40,000 for a fully configured system.

The basic MX90 unit with 32 input ports and two composite channels costs $7,600.

A 96-port unit with four composite channels costs $18,600. The PD90 costs from $7,600 to $15,600.

Prentice, P.O. Box 3544, 266 Caspian Drive, Sunnyvale, Calif. 94088.

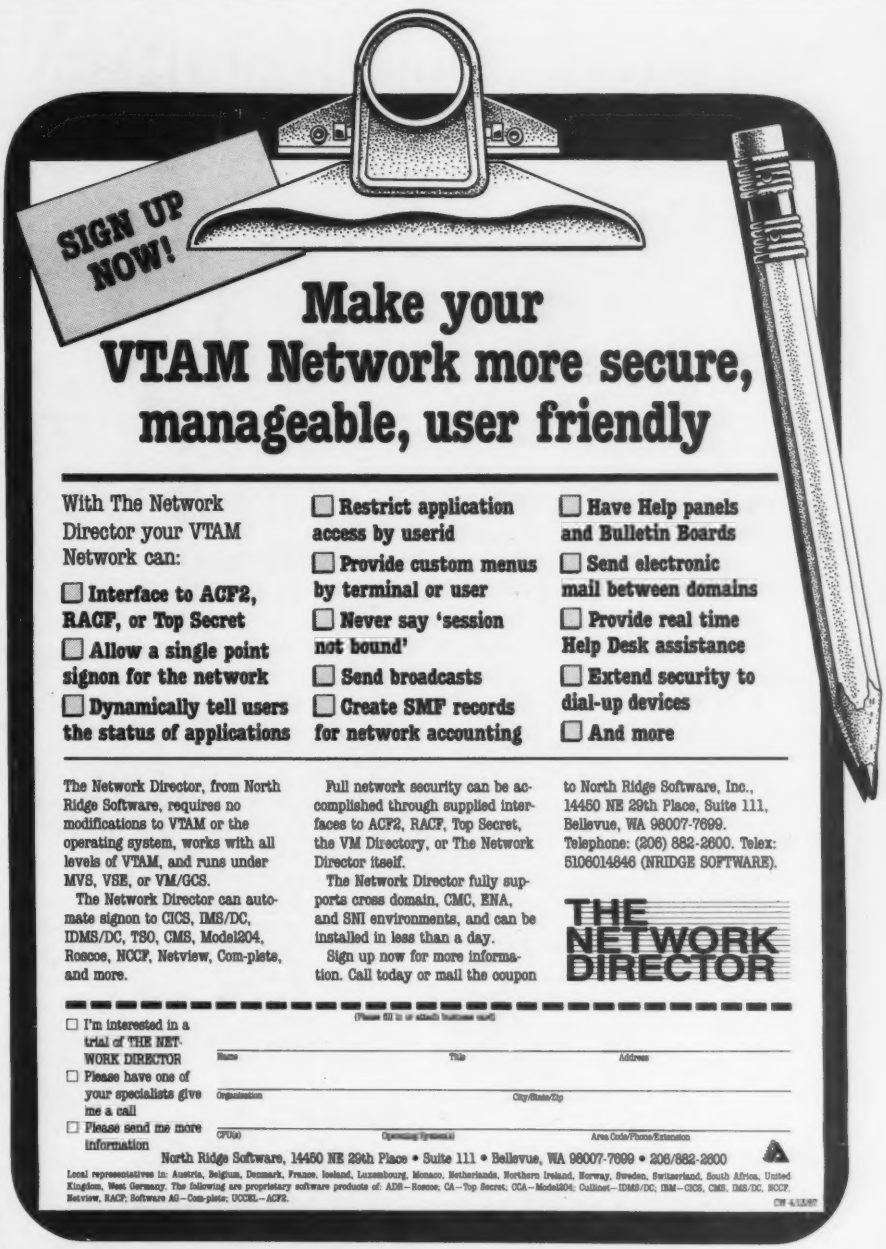
Links

Digital Communications Associates, Inc. has announced **Smart Alec Version 1.6**, an enhanced release of its IBM System/34, 36 and 38 local-terminal emulator.

Version 1.6 is said to offer enhancements such as emulation of an IBM 5292 Model 2 graphics terminal; support for the Toshiba America, Inc. P351 and the Epson America, Inc. FX; and an additional hot-key sequence allowing a transparent transition from the IBM emulator to Smart Alec. It also offers compatibility with IBM's Personal Computer organizer, the vendor said.

Smart Alec Version 1.6 is priced at $895. It is available to current users free of charge.

Digital Communications, 1000 Alderman Drive, Alpharetta, Ga. 30201.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The Systems Center, Inc. has announced Release 4.0 of **Networld Datamover-PC** (NDM-PC).

The software is said to enable IBM Personal Computers to transfer data with mainframes running NDM-MVS and NDM-VSE products in a Systems Network Architecture (SNA) network. Release 4.0 includes support for the IBM 3270-PC and for Pathway Design, Inc.'s Netpath SNA-3270 product.

It also makes data-transfer statistics available at the PC and offers improved line utilization and file-transfer performance.

NDM-PC is priced from $4,000 for 10 copies. Prices for the host version of the product start at $10,000 per CPU for IBM VSE systems and $22,000 per CPU for IBM MVS systems.

The Systems Center, Suite 300, 1320 Greenway Drive, Irving, Texas 75038.

Forest Computer, Inc. has introduced **Blueline SNA 3270** for interactive communications between a Hewlett-Packard Co. 1000 A, E or F Series computer and an IBM 370 or compatible mainframe.

Blueline SNA is said to allow terminals and application programs on an HP 1000 to emulate IBM 3278 terminals attached to an IBM Systems Network Architecture 3274 cluster controller. It includes the capability to interact with the IBM mainframe via HP block-mode terminals connected to the HP 1000 computer.

It also allows programs on an HP 1000 to be written to programmatically communicate with programs on an IBM mainframe via emulation of an IBM 3278 terminal.

Blueline SNA 3270 costs $7,000.

Forest Computer, 1749 Hamilton Road, Okemos, Mich. 48864.

Security

The Systems Center, Inc. has added the **Activity Reporting System** (ARS) to its Network Datamover (NDM) product family.

ARS is said to work with NDM-MVS to provide a reporting facility for monitoring and documenting data-transfer activity. ARS provides information on how network resources are used. Reports identify exception conditions, isolating when, where and why a problem occurs. Reports also identify attempted security violations, assist in analyzing operations for capacity planning and provide records for charging back users for network services.

ARS is priced at $7,500 for the first CPU at a site and $2,500 for each additional CPU at the same site.

The Systems Center, Suite 300, 1320 Greenway Drive, Irving, Texas 75038.

Modems/Multiplexers

Micom Systems, Inc. has introduced two **multiplexer Featurepak cartridges** for the Micom Box Type 3.

The Featurepaks include an enhanced synchronous statistical multiplexer and an enhanced synchronous wideband multiplexer and plug into the Micom Box Type 3 to combine up to eight synchronous channels, or 16 asynchronous channels, or a combination of both over a single composite link.

The statistical multiplexer transmits over a single RS-232C composite link and the wideband multiplexer transmits over a single V.35 wideband link.

A Micom Box Type 3 supporting four data channels costs $1,790. Each Micom Box Type 3 supports up to 16 channels; six-channel expansion cards are available for $1,250.

The statistical multiplexer costs $500 and the wideband multiplexer is priced at $900.

Micom Systems, 4100 Los Angeles Ave., Simi Valley, Calif. 93062.

Infotron Systems Corp. has introduced **Inmodems**, a line of diagnostic modems said to conform to CCITT standards.

Four of the six modems are analog devices supporting data transfers up to 14.4K bit/sec. over standard, unconditioned telephone lines. Two digital modems transmit data from 2,400 to 56K bit/sec. over the standard DDS network.

Both types of modems are said to feature remote comprehensive testing, monitoring and control, including alarm monitoring, line-level measurements and lead monitoring.

Functions include fault-tolerant hot spare modems, remote-control dial backup and centralized trouble monitoring.

Prices for the Inmodems range from $1,650 to $6,100.

Infotron Systems, Cherry Hill Industrial Center-9, Cherry Hill, N.J. 08003.

Diagnostic equipment

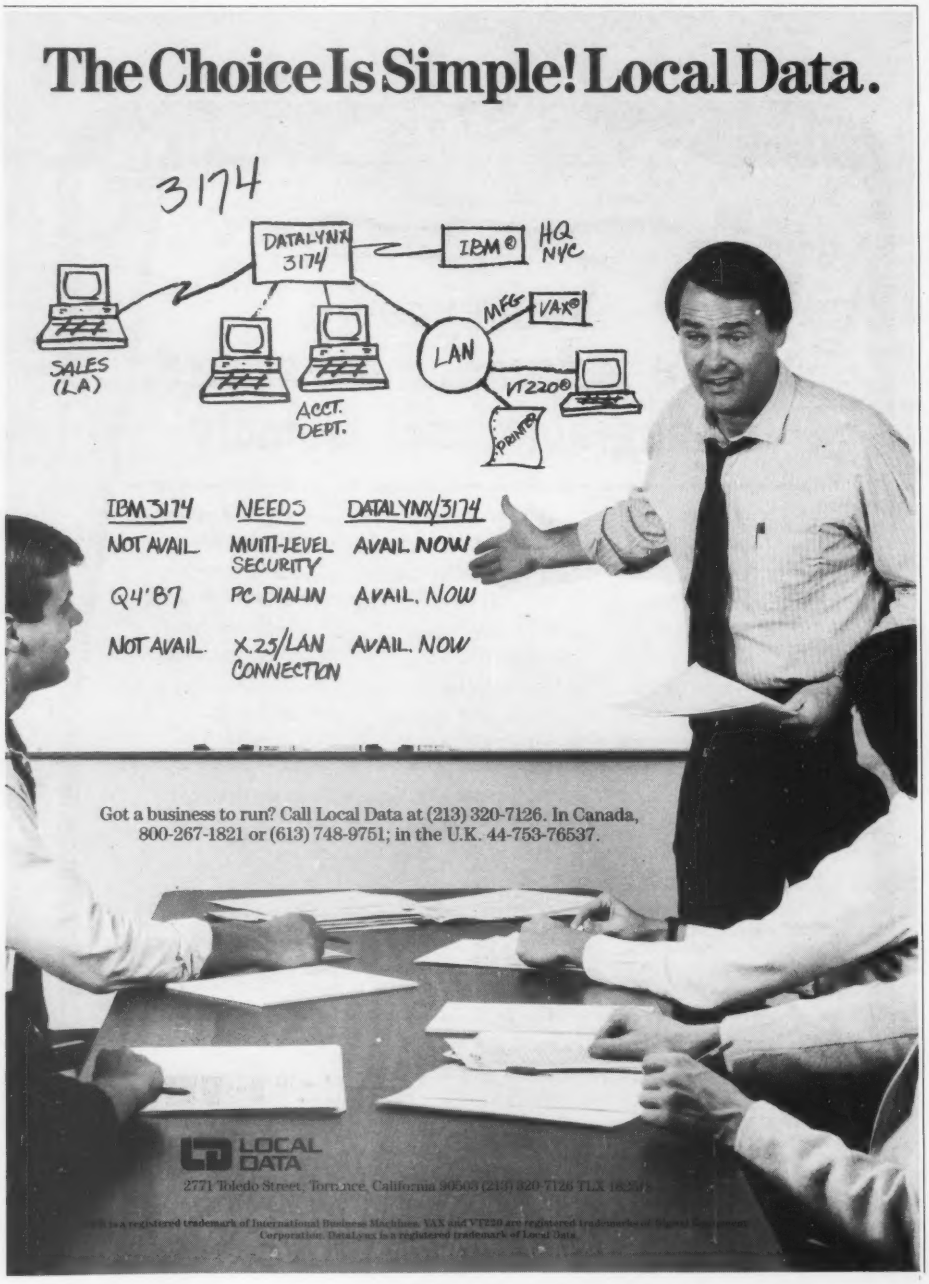
Applied Data Communications, Inc. has introduced the **MDT-8000** multiple-drive test system.

The MDT-8000 is said to be capable of simultaneously testing any combination of up to eight 5¼-in. and 3½-in. hard disk drives through connection to an IBM Personal Computer, PC XT, AT or compatible. Tests can be configured to vary in length from 30 seconds to 48 hours.

The MDT-8000 consists of four or eight of the vendor's MD-506 hard disk drive testers connected to the PC through an asynchronous communications board. Tests can be individually configured and can all be run simultaneously.

The MDT-8000 is priced from $19,000 to $35,000.

Applied Data Communications, 14272 Chambers Road, Tustin, Calif. 92680.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SYSTEMS & PERIPHERALS

HARD TALK

Thomas Peterson

In search of quick access

Mainframe relational data base software needs new access techniques for direct-access storage devices (DASD). The problem has been getting maximum performance out of both random and sequential access to a data base table.

Some of the problems may be resolved with new record structures and file allocation techniques that take advantage of DASD hardware technology.

Relational software is aware of every field of every row, in contrast to previous generations of access methods where awareness was limited to record sizes within blocks. Relational software also screens data before it reformats and passes it to the application program for further processing.

This new software, therefore, is not restricted to logical record concepts created for use with keypunch-card technology and blocking concepts designed for second-generation tape technology. It also is not restricted to DASD file allocation concepts used by third-generation soft-

Continued on page 66

Memory unit chops I/O delays

Add-on storage slashes access time for small Unisys mainframes

BY JEFFRY BEELER
CW STAFF

ANAHEIM, Calif. — Users of low-end Unisys Corp. processors can reportedly cut I/O access delays by up to 4,000% with an add-on semiconductor memory unit that Zitel Corp. introduced here recently.

Announced during a Cooperative Users of Burroughs Equipment meeting, RAM Disk/Small System Tower (SST) slashes memory accesses for Unisys B1000 and A series machines, made by the former Burroughs Corp., from 40 msec to 10 microsec, according to the company.

The reduction saves from two to six hours of processing work per day in batch environments, according to Robert Welch, chairman of Zitel, a Milpitas, Calif.-based semiconductor memory systems supplier.

In on-line transaction processing environments, the decrease in memory-access delays trims terminal response times from six or eight seconds to two or three seconds, Welch explained.

Available in 32M- and 64M-

Continued on page 63

Ultimate is early VAR for 9370

BY STANLEY GIBSON
CW STAFF

EAST HANOVER, N.J. — Leading the charge of what may be a large number of value-added resellers incorporating IBM's 9370, The Ultimate Corp. recently demonstrated its Ultimate operating system, which is based on Pick Systems' Pick operating system, with the minicomputer.

The package is set to be shipped when the 9370 becomes generally available. IBM recently announced that the 9370 will be shipped two months earlier than originally stated, with the first deliveries in July.

Claiming that his company already has orders from some of its 120 distributors, Ultimate President Theodore M. Sabarese said, "We'll be shipping the machines as soon as we can get them from IBM." The distributors will incorporate any of some 1,400 Pick applications with the computer and operating system for sale to users.

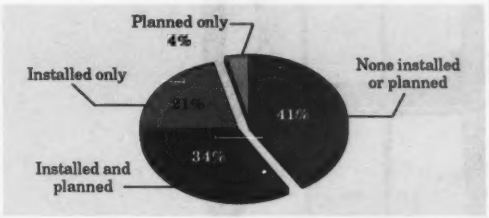
Ultimate will be selling the 9370 bundled with the Ultimate and IBM VM operating systems co-resident. According to Bob Markowitz, Ultimate's IBM product manager, the 9370 running both the Pick and VM operating systems offers an advantage over non-IBM Pick-based minicomputer systems because

Continued on page 63

Data View

IBM 3090 in Fortune 100 industrials

Only 55% of industrials have 3090s, according to a survey of large companies.



INFORMATION PROVIDED BY COMPUTER INTELLIGENCE
CW CHART: SUSAN ALDAM

National releases faster chip

BY JAMES A. MARTIN
CW STAFF

SANTA CLARA, Calif. — National Semiconductor Corp. has announced an advanced 32-bit CMOS microprocessor that the company says will be one of "the fastest real-time chips on the market."

The NS32532, scheduled to be available by the fourth quarter of this year, will be the seventh in a series of 32-bit microprocessors that National Semiconductor has released since it entered that market in 1982.

The chip will support Unix and its derivatives and will reportedly be fully compatible with all existing software programs that support National Semiconductor's 32-bit line, according to the vendor.

"National has kept on developing upgrades for its 32-bit line and has created an easy migra-

Continued on page 63

Inside

- Peritek offers a board set combining three Motorola intelligent graphics boards. Page 68.
- Eastek unveils an optical disk-based document processing system. Page 68.
- Intelligent Technologies enhances Bysinc 3270. Page 68.

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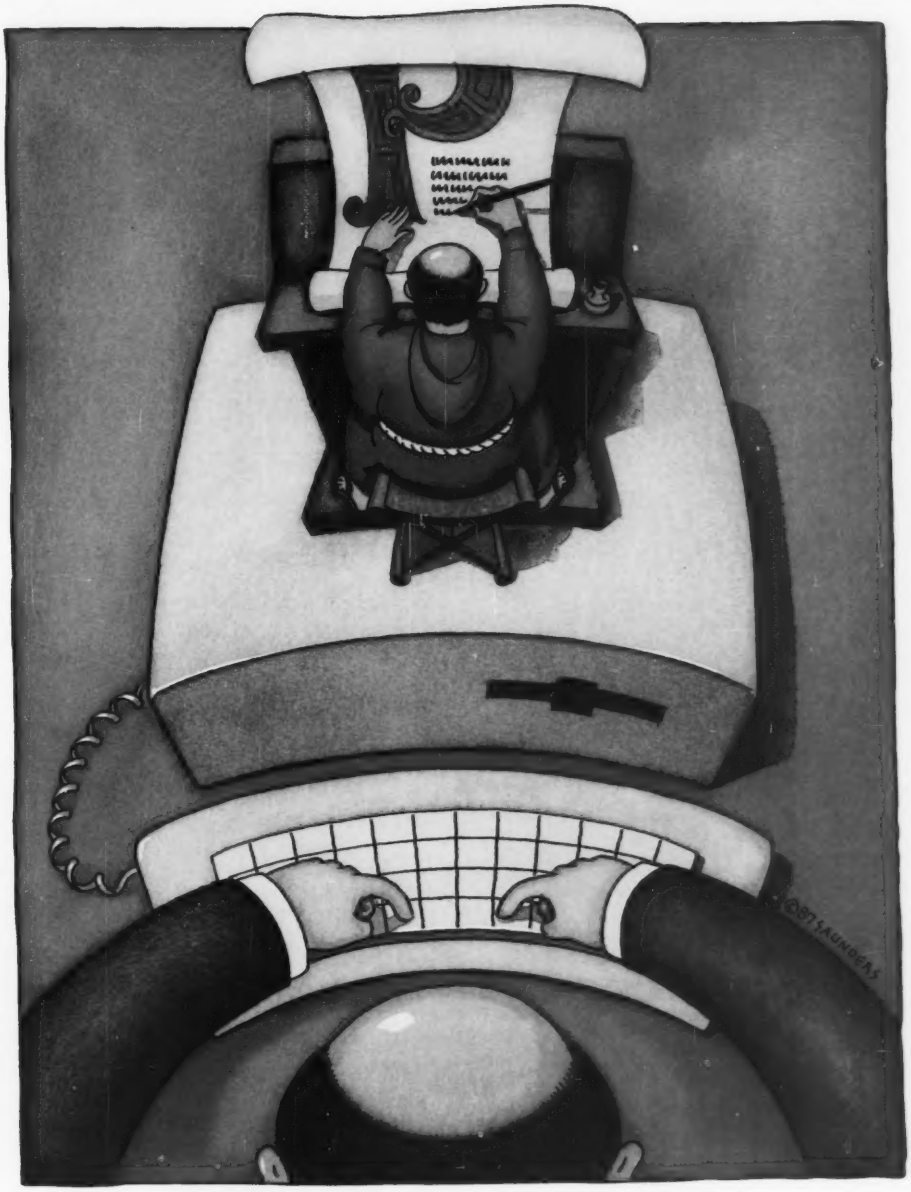
COMPUTERWORLD

SPOTLIGHT

DESKTOP PUBLISHING SYSTEMS



Electronic publishing at the desktop level brings users into closer touch with the creative process and introduces possibilities for new kinds of organizational communications. Assembling the pieces of these systems, however, can be tricky business, even for experts.

FEATURING
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Reader response service
DETAILS ON NEXT PAGE

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2. Identify those products/services for which you're requesting more information. Write their respective DIAL-INQ reader service numbers in the boxes provided in step 6.

3. Call *Computerworld* DIAL-INQ inquiry service at **413-637-3170 anytime, 7 days a week, 24 hours a day,** via touch-tone telephone and wait for the recorded instructions.

Please note: You will be asked to use the "star" (*) and the "pound" (#) symbols on your touch-tone telephone set during your telephone call.

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3. ☐☐☐[#][#]
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7. Complete your phone call by entering the following symbols:

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COMPUTERWORLD
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INSIDE

Power of Print
A Mac-based publishing system helps a Florida public-relations firm double its income, but its owner yearns for still more functionality. Page S2.

Interview
Desktop-to-mainframe compatibility and networked work-group publishing are just two developments Jonathan Seybold sees on the publishing horizon. Page S6.

Vendor Viewpoint
Full-blown desktop publishing systems aren't for everyone. Many users can be content with word processing software and a laser printer — for a fraction of the cost. Page S10.

Desktop-to-Mainframe Blues
With no clear statement of direction from IBM, Marine Midland Bank struggles to formulate its own multilevel publishing strategy. Page S12.

Sharper Image
Low-cost, 1,200 dot/in. color laser printers may not be here today — but they're coming. Meanwhile, you can add a 300 dot/in. laser printer for less than $2,000. Page S14.

Product Charts
A comprehensive guide to page-composition software. Page S17.

A selected listing of laser printer vendors and products. Page S15.

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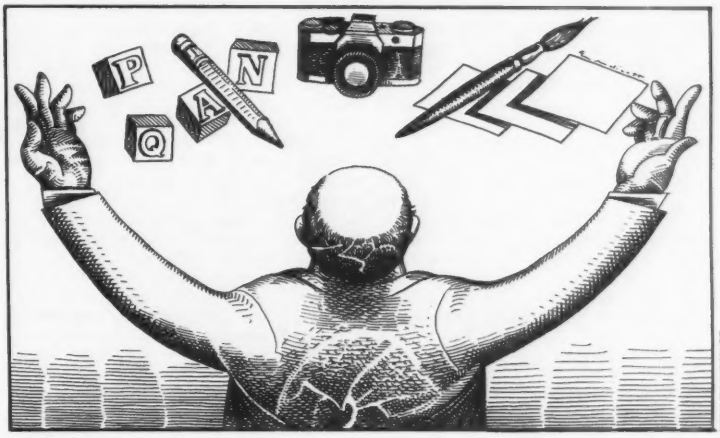
Software has improved PC-based publishing systems, but integration of all the elements can still be a juggling act.

BALANCE OF ELEMENTS

BY MICKEY WILLIAMSON



BY JAMES ENDICOTT

Desktop publishing systems do not always fit together easily and seamlessly. Even some experts find the task of assembling the components nettlesome. "We never stop having problems integrating things," says Michael Cosmo, a partner at New Edge Publishing Co. in Peterborough, N.H., an electronic publishing firm founded eight years ago.

One part of the problem has to do with the dizzying pace at which desktop publishing products are being introduced. The concept of desktop publishing was unknown until 1985, when Apple Computer, Inc. introduced the Laserwriter, the first printer to allow personal computer users to combine text and graphics on a single page. Now, dozens of desktop publishing software and hardware products exist for the IBM Personal Computer as well as for the Apple Macintosh. The result of all this product development activity is an abundance of choices that is baffling.

Also, despite all the sizzle about the capabilities of desktop publishing products, there are those who believe that the first batch of software offerings left something to be desired.

"Frankly," says David Henry Goodstein, president of Interconsult, a Cambridge, Mass., consulting firm that specializes in corporate electronic publishing, "the first generation of programs generated an amount of excitement and, in fact, an amount of revenue that was probably disproportionate to their true functional capability." According to Goodstein, the early software generally performed slowly, was limited in its ability to integrate text and graphics files from different sources and delivered cryptic error messages from which there was no recovery.

"We are just now seeing the second generation appear," Goodstein continues, "and all the reviews and early indications are that these packages are now mature." These products, he says, execute faster, possess reliable facilities for file handling and error trapping and offer a simpler, more intuitive user interface.

Last year, Michael Eff tackled the job of assembling a desktop system for the Computer Society of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). Eff, systems manager for the Computer Society, was handed the assignment when the group decided to demonstrate the capabilities of desktop publishing to its members by using the system in the actual production of one of its magazines, *IEEE Expert*.

Eff started with a Macintosh 512 owned by the Computer Society and equipped with two low-density disk drives. He considered Ventura Publisher from Xerox Corp., Aldus Corp.'s Pagemaker, an early version of Letraset USA, Inc.'s Ready, Set, Go and several others. "I didn't find a perfect program," Eff says, but he finally settled on Pagemaker. Some packages were too expensive; others were deficient in making text flow from one page to another when editorial changes were made or in the ease with which text and graphics could be imported from external files.

Were he to conduct the same search today, Eff says, his assessments would probably be quite different. "You have to understand," he explains,

Williamson is a technical journalist based in Warwick, Mass. She is the author of *Artificial Intelligence for Microcomputers* (Simon & Shuster, Inc., 1986).

Balance

FROM PREVIOUS PAGE

"that I did this six months ago. Since then, a lot of new programs have appeared, and a lot have been modified." Aldus, for example, exterminated the Pagemaker bugs that sometimes resulted in lost work. Other vendors added features that make it easier to import graphics and redeploy text.

Calling for help

Tom Vadden, supervisor at Nashville-based McQuiddy Printing Co., a print shop that handles "everything from business cards to books," simply looked at the plethora of offerings and decided to call in a systems integrator. "It's a big step to start with, changing from one system to another," Vadden says, "and if you have someone who can integrate it for you, you take away a lot of your headaches."

Another option for those who find sifting and matching too onerous a task is to buy a turnkey desktop publishing system. Several vendors have assembled systems whose components can be expected to work together without squabbling over memory locations or file formats.

Kaypro Corp. sells its Kaypro 286 IBM Personal Computer AT-compatible with a 30M-byte hard disk, graphics based on IBM's Enhanced Graphics Adapter, monochrome monitor, mouse, laser printer and several software packages, including Ventura Publisher, for about $8,500. Epsilon Graphics Systems assembles a system around an AT-compatible computer, a QMS, Inc. KISS laser printer, a 13-in. Wyse Technology monitor, Pagebuilder software from White Sciences, Inc. and a Canon U.S.A., Inc. scanner for about $8,000. Other companies that offer turnkey desktop systems include Xerox, Canon, Hewlett-Packard Co. and Cordata Technologies, Inc.

IBM has promised for third-quarter delivery a turnkey publishing system based on the IBM Personal System/2. Called the IBM Solutionpac Personal Publishing System, it will include an IBM 300 dot/in. laser printer, Aldus Pagemaker and Microsoft Corp.'s Microsoft Windows, Windows Paint and Windows Write.

Typically, the cost advantage of buying a turnkey system ranges from minimal to nonexistent compared with the price of individual components. But single-source responsibility eliminates the opportunity for finger-pointing among vendors, and the consequent saving in time, not to mention wear and tear on the nerves of responsible users, may be considerable.

Build-your-own systems

For those who choose to build their own systems, a page-composition package is probably the most logical starting point. Generally, when people talk about desktop publishing software, what they really mean is the page-composition package that pulls text and graphics together into a page format. Graphics-intensive newsletters and brochures will probably start with text written on a word processor and graphics drawn with a drawing or painting program. Then, a page processing program such as Readysetgo or Pagemaker brings the two elements together. They make it easy to move blocks of text from one page to another and to make text flow around illustrations.

In evaluating page-composition packages, there are a number of key points to consider: the variety of graphics images that can be accommodated (vector, bit-mapped or both); the ease with which minor editorial changes can be made without having to go back to the word processor (Ventura Publisher links its text with that in the source word processing file, and changes in one appear automatically in the other); the ability to save design elements or style sheets for use in other documents; the length of documents that the package can accommodate; and types of printers supported. It may be important to know what happens when text is added or deleted. Some systems make automatic adjustments across columns and/or pages. Others store overflow text in a buffer to be retrieved when the user makes up the next page.

At a deeper level lie questions concerning the flexibility of permitted formats, such as mixing column widths on a single page or within a single document. Some packages are severely limited in the number of different printer fonts that can be used in a single document. In conventional printing, a font is the complete set of sizes and weights of a single typeface; however, in the desktop world, each size and weight is a different font, so the limitation on the number of fonts also limits the number of different sizes available and may mean a choice between boldface and italic, for example, when both are desired.

Control over kerning and leading, the first referring to the space between letters and the second to the space between lines of text, may be required to produce an aesthetically satisfying document. Automatic hyphenation is probably important, and it may be well to ask whether the system hyphenates from a dictionary or a built-in algorithm. The latter, based as it is on standard English hyphenation rules to which it admits no exceptions, can produce some strange results.

The interaction of text and graphics may be an important consideration. For example, some systems allow text to flow around an irregularly shaped graphic image. Some will allow a

Defining desktop publishing

Ascenders: The part of the letter that rises above the main body of type — the top of the letter "h," for example.

Descenders: The part of the letter that drops below the baseline — as in "y" and "g."

Font: In printing, the entire set of a typeface, including all sizes, styles and weights. In desktop publishing, each size, style and weight is an individual font.

Justified text: Text in which all lines either begin (as in left justified) or end (as in right justified) at the same point.

Kerning: The amount of space between individual letters.

Leading: The space between lines of text.

X-height: An alphabet's X-height is the height of the lower-case x, which has neither ascenders nor descenders.

Pica: A unit of measure in printing. Six picas equal one inch.

Point: A unit of measure in printing. Twelve points equal one pica; 72 points equal one inch. In its upper-case form, 72-point type is an inch high.

Ragged right: Text that is not right-justified. Generally considered more informal.

Reverse: White printing on a black background.

Roman: The upright version of a typeface.

Serif: A small line added to the end of the stroke of a letter. Serifs are believed to make type easier to read.

Type style: One version within a typeface — Italic, Roman, Bold, Light and so forth.

WYSIWYG or "what you see is what you get:" An attribute of page-composition systems that display full pages on screen so the user can check the layout. Some systems are more accurate than others in this display.

MICKEY WILLIAMSON

Wishing on a system: One power user's list

Jaclyn Willig *confers with a client.*

Among desktop publishers, Jaclyn Willig is what personal computer enthusiasts call a power user.

Owner of Newsletters, Etc., a Tampa, Fla., public relations and promotion firm, she regularly publishes 15 newsletters on her Apple Computer, Inc. Macintosh 512 with an added 20M-byte hard disk and an Apple Laser Plus printer, using Aldus Corp.'s Pagemaker, Microsoft Corp.'s Word and a variety of graphics programs and utilities. She says her $15,000 investment has long since paid for itself, and she has doubled her income since she bought the system.

"I have narrowed my procedure down from 11 to five steps," Willig says. Previously, the production of a single newsletter meant two or three conferences with the client, several trips to a layout artist and a typesetting shop — in short, "two weeks of running back and forth to all the different people," she says.

Today, she meets with the client, writes the newsletter, produces proof pages for the client's approval and gets finished pages to the print shop in a matter of hours.

"I charge for typesetting and layout that I used to have pay the artist and typesetter for, so now I make double the money," Willig claims. Besides, she says, clients request fewer changes when they are presented with what looks like finished pages instead of typed editorial copy.

Speeding up a system

Willig knows Pagemaker thoroughly and, while claiming to know absolutely nothing about programming, used Apple's public-domain utility, Resedit, to add commands and, as she puts it, to make it "lightning fast."

However, some of the features she would like to see cannot be added that way, so Willig developed a "Pagemaker wish list." To illustrate the list, she captured screen dumps of various Pagemaker menus, then used Macpaint to redesign them.

Here are some of the features this power user would like to see:

- To Pagemaker Version 1.124's toolbox, she added an eraser to touch up artwork and a polygon to make filled shapes other than the squares, rectangles, circles and ovals the package provides.
- She added to the file menu the ability to save an individual page for use in a new document.
- Using Resedit, Willig has added to her working version of the Pagemaker edit menu two new commands, "Bring to Front" and "Send to Back," for block moves of text. In her ideal system, she would be able to rotate a block of text or piece of art, placing it on an angle, for example. "This is especially useful for road maps, which are used in many brochures," she explains. She also would like to be able to flop a piece of art in order to change the direction it faces. She can do this now in a graphics program but would rather not have to leave Pagemaker to do it.
- To the tools menu, Willig would add custom rulers. "This feature," she explains, "comes from Apple's Macdraw. It allows you to determine the number of increments, minor divisions and major divisions of the ruler in any view of the page."
- She would add the ability to draw white and dotted lines to the lines menu.

Other features Willig says she would find in her ideal page-composition package include the ability to change type specifications automatically throughout a document, store and retrieve the measurement of a design element and copy layout specifications between left- and right-hand pages without remeasuring. •

MICKEY WILLIAMSON

Balance

FROM PREVIOUS PAGE

graphic to occupy more than one column on a page, letting it bleed across the gutter, or white space, between columns. Some cannot accept both graphic and text elements on a single line — a major problem when diagrams with labels are involved.

Flexibility in designing page elements such as headers and footers, automatic page numbering, the variety of design constituents such as solid lines and corners, the ability to use reverse — or white on black — typography, to print on different-size pages horizontally or on a slant may be of interest.

Graphics-intensive documents may include scanned images such as photographs, in which case the page-composition system's ability to accept such images will be of prime importance. A facility for turning the image horizontally, so that the subject is facing into the page rather than off of it, may also be desirable.

WYSIWYG and the user

Most users want a package with what-you-see-is-what-you-get (WYSIWYG) capability. But not all WYSIWYG systems are created equal; the difference in aspect ratio between display and printer may produce inaccurate results, for example. Some packages show only "greeked" text — illegible symbols to indicate the presence of text — in a full-page view. If the user needs only an idea of what the page looks like, that should not matter. If it is important to see the actual relationship between intercharacter spacing on the screen, this type of package is not suitable.

The importance of WYSIWYG depends on the user, says Arlene Karsh, director of computer publishing systems for the market requirements service at CAP International, Inc., a Marshfield, Mass., market research and consulting organization. "The real value of WYSIWYG is if you don't understand what you're going to get on output and you want to look at it first. WYSIWYG provides visual feedback. As the whole application moves toward users with fewer composition and visual skills, WYSIWYG becomes more important, but if you've been doing composition and page layout for 10 years, you don't need it as much. You know what the effect of a particular command is going to give you," she explains.

Different packages are suited to different types of documents. One user may produce newsletters with right-justified columns and few illustrations other than charts and tables. Another may rely more heavily on line drawings, digitized photographs and a variety of type styles and sizes. A third may concentrate on technical manuals, issuing documents of several hundred pages that include both text and diagrams. "Picking a publishing system is somewhat like picking a suit," Interconsult's Goodstein says. "You have to understand not only what your size is but also what your preferences are."

Documents assembled on a desktop publishing system may be produced on a high-resolution dot matrix printer at 150 dot/in. or, more commonly, on a laser printer with a 300 dot/in. resolution. For higher quality printing, output may be sent by modem or floppy disk to an ultra-high-resolution printer such as the Linotype Co. Linotronic 300, which prints at magazine-quality resolution of 2,500 dot/in. Most people can detect differences in the lower print resolutions without the help of a magnifying glass, particularly if they look at the curved portion of a character. But the difference between 1,200 and 2,500 dot/in. escapes almost everyone when viewed without magnification.

> "PICKING a publishing system is somewhat like picking a suit. You have to understand not only what your size is but also what your preferences are."
>
> DAVID HENRY GOODSTEIN
> INTERCONSULT

Some documents, such as corporate annual reports, probably require the highest resolution available; others, internal sales brochures, for example, will be satisfactorily produced on a 300 dot/in. laser printer.

Just as an operating system is necessary to interpret a computer application's instructions to the machine that executes them, a page description language is needed to convey the desktop publishing system's page composition directions to the printer.

Supporting page description

Putting aside a host of technical distinctions, the practical difference between page-description languages and operating systems is this: You may choose a computer because it can run under a specific operating system, but to pick a desktop publishing system because of its associated page-description language would be folly. Before long, experts say, the norm will be for a system to support a variety of languages, any of which may be invoked for a specific printing application.

From the user's standpoint, the debate

Continued on page S5

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...ound bill to move data ...oversight away from ...ry. Page 10.

...C jumps on the publish... ...bandwagon. Page 92.

...laxy from Lotus picks ...p where Jazz limped off. ...Page 29.

A little-known company's DB2 dictionary is in use at a New York investment bank. Page 19.

Travelers Corp. MIS sails to Ireland for software development and maintenance. Page 57.

Microsoft promises 286-DOS tool kit within six months. Page 6.

BULLETIN:
Datapoint Corp. Friday announced a 37% reduction in its U.S. work force, in addition to overseas cuts. Reporting a second-quarter loss of $65.8 million on revenue of $74.3 million, the firm said the severance of 786 employees, write-offs and reserves for products no longer deemed strategic will cost $56 million.

...IBM 9370 and DE... ...according to Charles E. Exley Jr., chairman and president of NCR.

Like NCR's 9800 transaction processor, the Tower 32/800 system is based on multiple processors in a loosely coupled architecture.

Users can expand the system incrementally by adding plug-in processors to specifically handle application processing, file storage, terminals and printers, wide-area communications and local-area networks.

Under the modular architecture, segments of the Unix operating system are distributed to the specific processor responsible for that activity. This reduces system overhead on the applications processors and lowers system bus communications, NCR said.

The 32-bit system supports up to 64M bytes of main memory, 850M bytes of fixed-disk storage and 128 physical devices. In its largest configuration, the system offers a 14-fold performance increase over the entry-level Minitower, NCR said.

"At the same price point, the 32/800 delivers 1½ to two times the computing power of the 9370 — or conversely, the 9370 is 35% more expensive," noted

Continued on page 6

...used. Once ... could better employ the ... ing power on personal ... ers and, in some cases, on ... computers without becoming divorced from the central data processing function.

Some software vendors, such as Cullinet Software, Inc., Oracle Corp. and Relational Technology, Inc., say they believe distributed data bases will provide the bridge to link IBM mainframes to Digital Equipment

Few doing Windows

User, developer apathy plagues year-old interface

BY PEGGY WATT
CW STAFF

Little more than a year after Microsoft Corp.'s release of its Windows interface, as many as four out of five copies are still stuck in the evaluation room or shelved until applications appear.

Users and developers are at a standoff. Users say they will not adopt Windows until they have applications; software vendors say they want proof of Windows' acceptance before they plunge into development.

In addition, some vendors claim a love-hate relationship with the Windows concept and its proponents. They complain about pressure from Microsoft to develop for its pet project or say that writing to Windows is too difficult to be done quickly.

Even those in the industry who say they like the idea of a universal graphical interface are not certain the winner is Windows.

The result is a lull in Windows activity. Infocorp, a market research firm in Cupertino, Calif., estimates 85,000 to 100,000 copies of Windows are actually in users' hands. That is only 20% of the 500,000 copies Microsoft claims to have shipped, including OEM-licensed copies and runtime versions bundled with Windows applications.

"It's a catch-22," says Tim Bajarin, president of market research firm Creative Strategies Research International in San Jose, Calif. "Developers, including Microsoft, have to get the applications out. But a lot of developers tabled it.

Continued on page 14

Mac ripens as business alternative

BY PEGGY WATT
CW STAFF

LOS ANGELES — With today's scheduled introduction of two open-architecture models of the Macintosh that also read Microsoft Corp. MS-DOS and Unix files, Apple Computer, Inc. said it intends to finally deliver the hardware that backs the company's pitch of the Macintosh system as a viable corporate alternative to the IBM Personal Computer.

In a show of support for Apple's new "open Mac" policy, a host of third-party developers this week also are scheduled to announce software that takes advantage of the systems' new color and capabilities and add-on boards that were previously not

Continued on page 94

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COMPUTERWORLD

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Balance

CONTINUED FROM PAGE S3

concerning page-description language standards is just so much sound and fury. Joel Wecksell, director of sales at Data Recording Systems, Inc. in Melville, N.Y., warns, "When users start dealing with some of the silly things the vendors deal with, they move away from solving the problems they are trying to solve with a desktop publishing system."

A page-description language is a language just as much as Cobol and Fortran are, Wecksell says. Normally, the page-composition program writes page-description language instructions without the user's intervention, but the language is available to the user for insertion of additional instructions.

In theory, page-description languages are device independent. "Their advantage, beyond the fact that they deal with standards, is that they allow us to separate the page description from the specific output device," Wecksell explains. Thus, proof prints can be made on one printer and the final version on another, more expensive one.

AGONIZING over the choice of a page-description language is a useless exercise.

The three major page-description languages are Postscript from Adobe Systems Corp., Xerox's Interpress and Imagen Corp.'s DDL.

Postscript is the oldest and most mature of the three languages. It is also supported by the widest variety of hardware and software products. Postscript treats fonts as though they were graphics; because characters can be scaled to any size during printing, only one version of each character is kept in memory, saving space that would otherwise be required to keep each size available.

Postscript takes on most of the computations required in printing, freeing the CPU for other tasks, a trait that will become more valuable when a multiuser Postscript appears.

Postscript command files can be printed in ASCII characters, a plus for telecommunications and easy debugging. However, it is slow: It can take a half hour to produce a single complex page. Another disadvantage is that Postscript's orientation is toward pages, not entire documents, which diminishes flexibility.

Interpress has the networking support Postscript lacks and is better suited for long documents, particularly those that are to be printed on both sides of the page. It is supported by only a few software packages and no desktop printers as yet. Interpress represents command files in binary code, and a utility converts them into readable form for debugging.

The best of both

DDL is the newest entry in the field, and, predictably, it tries to combine the best features of both its elders. Like Interpress, DDL can handle two-sided printing. Like Postscript, it can also store readily scalable outline fonts. In scaling characters, DDL applies built-in rules about proper proportions, much as a type designer would do. It caches graphic images to save printing time and accepts code in both ASCII and binary. Like Interpress, there is as yet little product support for DDL. But HP chose DDL as the driver for its Laserjet Plus printer.

Wecksell calls Postscript the obvious favorite in the standards race, pointing out that Apple is selling five thousand or six thousand Laserwriters a month, all with Postscript interpreters. But, DDL has a shot at catching up and passing Postscript, he says. "Hewlett-Packard does have over 300,000 Laserjets," he observes, "and many software vendors that are currently supporting Postscript will also support DDL." Xerox's Interpress cannot be discounted entirely either, Wecksell adds. "Xerox has long been a presence in the nonimpact printing market. Who knows more about page-description languages than Xerox? Most of the original work was done there," he notes.

According to Interconsult's Goodstein, whose consulting firm is a cosponsor of the twice-yearly Corporate Electronic Publishing Show, agonizing over the choice of a page-description language is a useless exercise.

There is no need to worry about standards and obsolescence as far as page-description languages are concerned, Goodstein says. "With a desktop publishing system, you make your money back so fast that if, in a year, there's something better, you throw it away," he says. Besides, a number of vendors are developing utilities that will translate page-description languages, making the choice, and the battle, among vendors completely irrelevant, he adds.

Unfortunately, not all compatibility problems are so easily dismissed. At CAP International, Karsh says she is still trying to find out why a certain desktop publishing system, which she declines to name, will not run on the company's "el cheapo Taiwan clone that we bought from our local computer store. For basic word processing it works just fine," she says. "But this publishing program needs a Hercules [Computer Technology, Inc.] card and a mouse, and for some reason it isn't running on our hardware. At this point, we don't know if it's the software or if we don't know what we're doing or if it's the

Continued on page S8

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DIAL-INQ READER SERVICE NUMBER 48

INTERVIEW
OUTWARD AND UPWARD

Jonathan Seybold has been at the forefront of the development and use of electronic publishing systems for more than two decades. He is now president of both Seybold Publications and Seybold Seminars. Seybold Publications publishes the twice-monthly *Seybold Report on Publishing Systems* and the new monthly *Seybold Report on Desktop Publishing*. Seybold recently spoke with *Computerworld* Senior Editor Joanne Kelleher.

How do you see desktop publishing evolving within the corporate environment? What is its place, relative to larger corporate electronic publishing systems?

There are very few publishing functions, in terms of document preparation and document formatting, that cannot be performed on the current generation of desktop computers. There is no valid distinction between desktop and larger systems from the standpoint of what they should be capable of doing in preparing, editing and formatting. The differences between desktop systems and larger configurations have to do with data base management and the size and complexity of the publication's process.

My feeling is that all publishing systems in the future will rely heavily on desktop computers, that smaller systems will be networks — collections of desktop computers on which the user is able to perform his own integration — and that larger configurations will be those that require more sophisticated data management tracking, revision control and control of information.

What would you say the current level of usage is for desktop publishing systems within corporations?

Compared with the traditional publishing market, desktop publishing systems have already sold in very significant numbers. We calculate that Apple Computer, Inc. is currently the largest vendor, on a worldwide basis, of electronic publishing systems, if you count the sales of Laserwriters and related Macintosh systems.

But, if you turn that around and look at it from the standpoint of potential, particularly in the office marketplace, Apple has barely scratched the surface.

One thing that we need to make very clear here is that we are talking about a communication technology, capable of producing a whole range of documents — everything from presentation documents such as overheads and slides and things — through very large, very complex manuals. There are all kinds of untapped markets here, and I think that the presentation market is certainly one of them.

The fact that, on the desktop publishing side of things, the first really successful application program, Aldus Corp.'s Pagemaker, happened to be directed at, and most suitable for, newsletter kinds of documents has misled many people into thinking that desktop publishing is essentially something that is done by a few people to produce newsletters. And that, to my way of thinking, grossly underestimates the impact of desktop publishing.

Do you expect that there will be an eventual meshing of desktop publishing functions into other applications?

I don't think you are going to see Swiss army knife application programs that do everything for everyone.

I think the evidence so far is that it is almost impossible to write a program of that sort that is as strong in every aspect as programs more specialized for certain applications. What I do believe is that publishing programs will become more comprehensive than they are right now. They are certainly going to subsume word processing functions and a lot of basic graphics functions.

I think that what you will also see are increasingly effective standards for data exchange between different kinds of application programs. One good example of this would be data exchange between a data base management program and a publishing program. Some people are already doing this, and I think we'll see much more of it over time.

Eventually, I expect we will have the ability not only to take data manipulated in the data base management system and format it for publishing, but also to go backwards and extract data from a document that is being published to be fed into a data base management program for further manipulation.

What, if anything, is currently inhibiting corporate usage of desktop publishing?

There are several things. First of all, the technology is still evolving very rapidly.

In 1987, we are going to see much more powerful desktop computers, in both the Apple and the MS-DOS worlds. In fact, we are seeing them already.

The applications software is much better this year than it was last year, and it will be much better next year than it is this year. There are a lot of things missing, but most are being addressed.

What is now missing in the Macintosh environment is the extension that Apple will bring about this year with networking, with Appleshare and with the more powerful Macintoshes. There is also still some applications software missing on that side of things, particularly really good applications software for doing long documents.

The biggest thing that is happening this year in the MS-DOS world is the emergence of a design center that, while not yet as coherent as what's available in the Macintosh world, is beginning to make it easier for people to build MS-DOS publishing systems. That will probably become better defined over the course of this year.

In the Unix world, we have the emergence of some standards with things like X Windows that bring more coherence for this kind of environment as well. And as the MS-DOS and Macintosh worlds come up in terms of workstation power and the Unix world comes down, we see that the three of them are meeting each other in the marketplace.

In terms of the platforms, those are the challenges. But the thing that is going to be the biggest challenge for this year and next year and probably the year after that is going to be networking and building systems.

We will see better, easier-to-use networking solutions that will enable people to assemble these things into systems. And we are starting to see much better integration of desktop computers and minicomputers from companies like Digital Equipment Corp., Hewlett-Packard Co. and Data General Corp.; solutions that allow you to tie these things into shared data bases that run on minicomputers.

ALAN WITSCHONKE

Jonathan Seybold

So all of the hardware pieces are beginning to come together. The systems and data management aspects of tying these things together will be the factor that determines the size and complexity of the applications that can be tackled.

So, is it your feeling then that all desktop publishing systems will soon have to be networkable?

Absolutely. In general, my feeling is that the microcomputer revolution that started in the late 1970s was brought about by people who were iconoclasts, who were anticorporate and believed in personal computing on people's desks, and I believe that was a digression that unfortunately has set us back in terms of where computers should be going.

And we've now come to realize, as we realized before, that people work in groups and they need to share information and work with information in groups. And that is probably more true in publishing than in most other activities. Publishing is inherently

a work group activity.

Do you expect that this is going to introduce new players to the marketplace?

Well, everybody in the Unix marketplace is either already in or will be in. I think that, before long, no one will be selling Unix workstations that don't include publishing activities as almost a given. That includes Sun Microsystems, Inc., Apollo Computer, Inc. and everyone else.

The other interesting players are companies like DEC, Hewlett-Packard and Data General. I mentioned the significance of integration and data management, and those are exactly the areas in which these companies would be playing. That focus is directly in line with their strategies.

Are there any situations in which you feel it is advisable, or not advisable, to purchase a turnkey publishing system?

As we progress, it is going to get easier and easier for users or value-added dealers to build their own systems. In the Macintosh segment this is already the norm. It is not yet the norm for MS-DOS. And because it is not yet the norm, there are some PC vendors who have seized the opportunity to put together turnkey system packages that take care of all integration issues for you because they come prepackaged. I believe that this is an interim situation, and that MS-DOS must, and will, get to the point where it has more of the plug-and-play nature of the Macintosh world, where there is a much more coherent design standard and where people can buy different hardware and software and plug it together and build their own systems.

I further believe that what Apple is doing with Appleshare, in terms of providing an easy-to-use, multiuser, networked microcomputer system and the kinds of tools that are becoming available in the minicomputer world from people like DEC, is making it easier and easier for people to build multiuser systems out of readily available, off-the-shelf hardware and software. So, my expectation is that, in the next few years, people will begin to build more and more ambitious systems for themselves.

Although this will nibble away at the bottom of the marketplace, there will still be people who have needs that go well beyond what you could reasonably expect to assemble from off-the-shelf hardware and software. The key things here will be the need for fairly complex and ambitious management of the information to be published. And this is where, long term, there is going to be the need for systems integrators.

You have said that you expect a shift from character-based to graphics workstations. How quickly do you expect this will happen?

This almost becomes a religious issue with people, so I'll have to state my biases on this and admit that they are biases. I believe, and have believed for 15 years, that a graphics user environment is a superior user environment for desktop computers. And I believe that this is manifestly true when you are dealing with things that are inherently graphical, that is, graphic information, pictures, images and a whole body of type faces and sizes. And it is my opinion that we are moving inexorably toward graphic user workstations, and that these are natural for publishing applications. However, the reality of the marketplace is that there are millions of the older generation, character-oriented, mostly MS-DOS, machines out in the marketplace, and they are going to be around for a long time.

In fact, one of the things that is most interesting in the marketplace is the assumption various companies make about how long the character-oriented world will remain dominant.

Both Lotus and Ashton-Tate in their publishing products appear to be making the assumption that the character-oriented world is going to be around for quite some period of time. Lotus's Manuscript was deliberately written to be something that would run effectively on a character-oriented machine. Most other companies in the field, though, are making the assumption that people who are doing publishing activities are going to move toward graphics machines, and that character-oriented machines, to the extent that they are still around, are going to be used mostly for raw text preparation. My feeling is that ultimately all desktop computers will be graphics-oriented machines but that the transition will happen first and strongest in areas where there is the biggest return for being graphically oriented. And desktop publishing is one of those applications.

How about output technologies? Are there any areas in need of further development?

Right now, we have a very odd output technology market. We have very cost-effective 300 dot/in. printers in the under-$7,000 price range. And then we have what is essentially a black hole in the marketplace above that, until you get to machines that are in the $40,000-plus range. The machines in between have not been terribly cost-effective because, at $20,000, you aren't getting three times the machine that you get at $7,000.

The other thing is that in resolution, you jump from 300 dot/in. pretty much to the typesetting kinds of machines that are 1,000-plus dot/in. And it seems to me that there is real need in the marketplace for lower cost, high-resolution output devices. •

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DIAL-INQ READER SERVICE NUMBER 49

Balance

FROM PAGE S5

clone. But it doesn't work."

The Macintosh provides a standard environment for desktop publishing systems, including a user interface common to all software, a built-in screen and printer fonts. There is no such uniformity in the Microsoft Corp. MS-DOS world, however, so a desktop publishing environment is usually created by an additional piece of software such as Microsoft Windows or Digital Research, Inc.'s Graphics Environment Manager.

MS-DOS vs. Macintosh

The difficulty is that neither of these environments has been accepted by software publishers as the standard, so a compatibility issue lurks here. "Everything on the PC is trying to pull a trick, as far as device drivers, screen display and the like," says Scott Boag, manager of desktop publishing systems at MBI Business Centers in Waltham, Mass. "Therefore, you find a lot of software that doesn't work well together. The more you add, the more confusing it gets."

> "APPLE seems like an absolute garden of harmony compared to trying to run different applications on an MS-DOS machine."
>
> THAD McILROY
> McCUTCHEON GRAPHICS CO.

Compatibility among system components is also less of an issue in the Macintosh world, according to New Edge Publishing's Cosmo, particularly since the advent of the Macintosh Plus, which was specifically designed for publishing applications and requires no graphics enhancements. "[The problem is] not exactly past tense," Cosmo says, "but the worst failures and incompatibilities have been ironed out. Apple is very strong about requiring that third-party manufacturers adhere to certain standards. That is the largest single reason why we trust the Macintosh."

Thad McIlroy, product manager at McCutcheon Graphics Co. in Toronto, addresses the PC vs. Macintosh debate this way: "The two biggest points against the MS-DOS machine are that it was never set up to be a graphics machine and that IBM has written the book on incompatibility. Apple seems like an absolute garden of harmony compared to trying to run different applications on an MS-DOS machine."

There is good news for organizations whose information resides on MS-DOS machines, however. According to McIlroy, "Bridges between the two worlds are coming along very well. [Dataviz, Inc.'s] Maclink, for example, is a piece of software that is reasonably good for transferring MS-DOS applications over to the Macintosh." The major exception, McIlroy adds, is in transferring graphics created under an MS-DOS application, such as Lotus Development Corp.'s 1-2-3. "I don't know of any piece of software that will do a good transfer from any MS-DOS graphic program to the Macintosh," he says. "You'd have to recreate your graphics on the Mac, and it's much easier to create them there anyway."

Two Macintosh computers, the Macintosh SE and the Macintosh II, address the MS-DOS compatibility problem by providing for the addition of disk drives and processor boards to run MS-DOS applications.

Compatibility is not the only thing confounding users and potential users of desktop publishing systems, though. Another source of frustration has been the limited and separate nature of these systems. Desktop publishing, as currently structured, is largely a solitary activity. It does not permit work-group-scale collaboration or interfacing with larger corporate electronic publishing systems.

"Desktop typically falls down where the host PC falls down," Goodstein says, "in management of large, complex data

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"The line of demarcation between desktop systems and the next step up, a workstation environment, is the ability to handle the kind of file management required where you have 15 or 20 technical editors working on the same document," he continues.

However, that limitation may not last much longer. Computers based on the Intel Corp. 80386 processor will provide the speed and file-serving capabilities that can link whole teams of writers. Furthermore, several recent product announcements from IBM and Digital Equipment Corp. show a clear trend toward the integration of desktop publishing with work group and corporate electronic publishing systems.

In March, IBM announced support for both the Postscript page-description language and Microsoft Windows as its desktop publishing environment, which will give users interested in remaining within the MS-DOS arena some standards to cling to.

Then at the beginning of this month, IBM announced its Solutionpac Personal Publishing System and Solutionpac Publishing System VM Edition.

Corporate support

While these systems are currently incompatible technologies, IBM's Systems Application Architecture can be expected, when it is fully implemented, to edge these separate pieces toward collaboration.

IBM's support for existing desktop publishing products is welcome news in many MIS departments, where rumors of a proprietary IBM desktop publishing specification evoked fears of isolated desktop publishing systems unable to communicate with the corporate information environment.

DEC, too, announced support of Postscript and Windows as part of an Ethernet-based publishing system built around the Vaxmate, an MS-DOS machine, and Aldus's Pagemaker. A standard document-interchange format, designed to support the guidelines being developed by the International Standards Organization and allow the exchange of documents containing integrated text, graphics and images is in the offing, a DEC spokeswoman says.

Positive aspects

Despite their current limitations, many organizations find that the benefits of desktop publishing systems far outweigh the negatives.

In Franklin, Tenn., about 15 miles south of Nashville, Greysmith Publishing Co. abandoned an old Compugraphics Comp 4 typesetter and invested approximately $12,000 in a desktop publishing system on which the company now produces an annual directory for the furniture industry, a monthly trade magazine for the lumber industry and a weekly tourist guide to Nashville and its environs.

Owner Bill Smith assembled a system consisting of a Unisys Corp. Sperry AT with a 40M-byte hard disk drive, Lexisoft, Inc.'s Spellbinder Desktop Publisher and a Laserjet Plus. Most text is composed on Micropro International Corp.'s Wordstar on "six micros of various clone breeds," Smith says, and converted for final editing into Spellbinder files.

"The biggest difference in the way we work now," Smith says, "is that we don't go through all that galley and proof process, which used to take days and weeks."

The saving in time means that Greysmith can accept news items for its lumber industry magazine later than a competing typeset magazine can. "We're absolutely scooping the competition," Smith says. "We can be in editorial five days longer than they can and still be in the mail the same day."

"There's always a temptation to wait another six months or a year in the hope that vendors will iron out incompatibility," Smith says, but by waiting for perfection a company may be bypassing savings and losing competitive advantage. "Desktop is going to change the way you publish," he says, "and the quicker you get on with it, the better your chances of staying in business." •

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DIAL-INQ READER SERVICE NUMBER 50

VENDOR VIEWPOINT
When less is more: Satisfying users' needs

BY FRANK LODGE

Desktop publishing is shaping up to be one of the hot topics of 1987. Fueled by price breakthroughs — laser printers priced between $2,000 and $2,500 are now available — enthusiasm has climbed in recent months.

Proclaimed as the wave of the future, this sophisticated technology with its promise of high-quality, end-user-generated output, is quickly gaining the status of a "must-have" for any modern office.

But is desktop publishing what the great majority of corporate managers really need and what professional computing personnel should be seeking to provide?

Do the requirements of most users dictate full-blown desktop publishing systems complete with hard disks, page-view monitors, scanners, an extensive memory, page-description languages and expensive printing engines?

DESKTOP publishing requirements for most large organizations can be classified in two ways: those areas with extensive external communications needs and the rest of us.

Or can most users' needs be met by lower cost, easy-to-use systems that enable production of typeset-quality documents that combine graphics with text in a variety of fonts and print and headline sizes?

Meeting requirements

MIS departments are carefully examining the needs of each user department before acquiring expensive desktop publishing systems and finding, in the majority of cases, that less expensive systems can satisfy their requirements.

Desktop publishing requirements for the majority of large organizations can be classified into two groups: those areas that exhibit extensive external communications needs and the rest of us users.

The former classification — corporate departments like sales, marketing and those departments in corporations that produce technical publications — require top-of-the-line publishing systems. The rest of us, who make up the overwhelming majority of personal computer users, do not.

Simple needs

A distinction between these needs can be made by using "enhanced word processing" to describe users with simpler needs and reserving "desktop publishing" for high-end users.

The average corporate user

Lodge is a laser-printer product manager at Okidata Corp., based in Mt. Laurel, N.J.

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needs enhanced word processing — a function that requires no more than an existing word processing package — or one of the enhanced releases that will soon be available.

These new desktop publishing packages will provide a what-you-see-is-what-you-get, or WYSIWYG as it is commonly known, capability and other features, such as headline capability, laser printer drivers and the ability to draw boxes and ruled lines.

AS personal computers proliferate on corporate desks, most users will need two capabilities: spreadsheet software and enhanced word processing. What these users will want is a professional look for their letters, memos, business charts and management presentations.

Enhanced word processing requires a PC (not necessarily one with a hard disk), a laser printer and a standard monitor. Desktop publishing software is optional — and probably not really necessary.

If the above definition sounds as if it includes most of what we call desktop publishing, there is no mistake.

Requirements

Much of what is considered desktop publishing can be accomplished at a fraction of the cost and effort through enhanced word processing. MIS personnel and other employees responsible for acquiring personal computer hardware and software must be aware of the difference in cost as well as in equipment and training requirements between the two.

Desktop publishing requires everything that enhanced word processing does, plus a page-description language, large memory, a scanner, a page-view monitor and a hard disk.

Desktop publishing also requires specialized user training and is not complete unless the operator is endowed with some measure of artistic talents, as well as an intrinsic knowledge of how to construct page layouts.

What users need

As personal computers continue to proliferate on corporate desks, most users will need two capabilities: spreadsheet software and enhanced word processing. What these users will want is a clean, professional look for their letters, memos, business charts and graphics and management presentations.

That is not to say there is no place for desktop publishing in the large corporation. The point is that the MIS manager should avoid desktop publishing overkill. Even the largest companies need only two or three publishing systems per location.

The balance of applications require a simple, easy-to-use, high-quality personal computer spreadsheet and word processing system at a reasonable price.

Promises

Laser printers with multiple resident fonts, multiuser capability, a copier-like ease of use, versatility in paper handling and, most important, the ability to work immediately with the installed or recently purchased software packages fit the bill.

Laser printers that fill these requirements are currently available for less than $2,500.

Desktop publishing promises magazine-page creation, halftones and the sizing and scaling of images and drawings; it clearly offers more capabilities than enhanced word processing. It is appropriate, in fact necessary, for certain corporate departments.

The lion's share of business needs, however, can be served by enhanced word processing — a version of desktop publishing available at a fraction of the cost and requiring little user training. •

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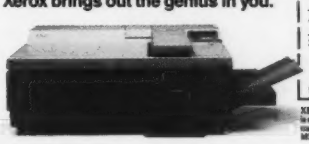

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DIAL-INQ READER SERVICE NUMBER 51

Corporate publishing: Improvising a strategy around Big Blue delays

BY GLENN RIFKIN

IBM has earned a reputation during the years for waiting until a market emerges and defines itself before jumping in and grabbing large chunks of the pie.

Electronic publishing is IBM's latest "wait-and-see" discovery. And now that the market appears to be a vast one, the shadow of Big Blue is starting to cover that rapidly expanding marketplace.

Based on market research, IBM foresees a $6 billion industry for electronic publishing by 1990, according to Merry Quackenbush, IBM's director of media and publishing systems. With its ubiquitous Personal Computer as the obvious starting point, the company is now unveiling its strategy to IBM shops.

This is welcome, if overdue, news for Barbara Buckley. In 1986, Buckley was assigned the task of bringing corporate publishing to the IBM-dominated Marine Midland Bank, N.A. in Buffalo, N.Y. As a team manager in the bank's information center, Buckley is responsible for product research and development. So, when MIS management at the $24 billion bank decided that desktop publishing — as a forerunner to corporatewide publishing — was an application worthy of attention, Buckley was handed the assignment.

The goal was to formulate a three-tiered corporate publishing strategy beginning with PC-based desktop publishing and eventually incorporating an intermediate range of workstations as well as the mainframe environment and the corporate print shop.

What Buckley immediately discovered, however, was that IBM didn't have any solutions ready for her. "We have about 1,500 IBM PCs at the bank, so we weren't eager to jump on the Macintosh bandwagon," Buckley says, referring to the Apple Computer, Inc. micro. "But IBM didn't have any products, so all I could do was read about what was coming and hope they'd arrive soon."

Despite the formation last July of a separate business unit for publishing, based in Boulder, Colo., and a marketing group to push the eventual products, IBM has quite a bit of ground to cover before it can even offer its customers a starting point.

It is true that the company has publicly announced a corporate publishing strategy [CW, March 16], but there are still many gaps left, and many questions remain unanswered.

'A bipolar approach'

Consultant Jonathan Seybold, who specializes in electronic publishing, believes IBM's initial strategy is going to make it difficult to construct the kind of seamless desktop-to-mainframe approach that Buckley seeks. "They seem to be taking a bipolar approach," Seybold says. "They see desktop publishing as being for very personal, short documents of the newsletter variety and host-based publishing only for large, more complex documents."

Seybold adds that companies committed to the IBM PC immediately find themselves far behind in desktop publishing capability.

Should Marine Midland with its 1,500 PCs consider Apple? "That's something they have to weigh very carefully," Seybold states. "It's clear that for the immediate future, Apple has a significant lead, and it's going to be quite some time before the [Microsoft Corp.] MS-DOS world gets to the point where you can do things as nicely as you can in the Apple world. Basically, MS-DOS is shooting to be where Apple was last year, and, in the meantime, Apple has raised the ante."

For Buckley, the realization that "IBM is far behind on everything," means a bit of groping in the dark and some grassroots pilot programs in order to start formulating an answer for management.

"Right now," she says, "we're going to a third party for software and for printers and probably for scanners."

For Marine Midland, the concern is that IBM get its product offerings ready and available before the bank gets too comfortable with third-party solutions. "If we make a recommendation on a product and start to proliferate it throughout the bank, it's going to be hard to back up to what IBM might bring in," Buckley says. "Once your company gets comfortable with a product, unless a new product is spectacular, there's a reluctance to switch in midstream."

According to Buckley, the first actual

Rifkin is a Senior Editor at *Computerworld*.

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DIAL-INQ READER SERVICE NUMBER 52

request for desktop publishing at Marine Midland came from the development center within the Information Systems Group. Developers there were working on a programmer's workbench and needed a tool to handle documentation. Programmers need to document everything, she says, and desktop publishing seemed an ideal answer to that problem.

At the same time, requests began to come in from other areas of the bank as savvy PC users started to get the itch from reading and hearing about the wonders of desktop publishing. Without an IBM solution to draw on, Buckley looked to a third-party developer for an answer. Aldus Corp.'s Pagemaker, a popular desktop publishing package, was not then available on the PC, so Buckley instituted a pilot using Xerox Corp.'s Ventura Publisher in the bank's New York corporate planning office.

Barbara Buckley

Even that small pilot found obstacles to overcome. "We had to teach ourselves how to use the package because there weren't any local classes in it," Buckley says. "Fortunately, it is an easy product to learn, and one of my product specialists was able to pick it up in three or four days."

The early results of the Ventura pilot look positive, and both Pagemaker and Software Publishing Corp.'s Harvard Professional Publisher will also get tryouts. Buckley is preparing to recommend a package by the end of April.

While struggling with the implementation of desktop publishing, Buckley must consider the issue of corporate publishing, Marine Midland's ultimate goal.

At the print-shop level, the bank now uses a Compugraphic Corp. machine but is considering new equipment. Buckley is pushing for Postscript compatibles, since one of IBM's early publishing commitments at the desktop level was to Postscript as the page-description language.

"If we have something that is Postscript compatible, we could use the desktop system to develop documents, output them and proof them on the dot matrix printer and then just send up to the print shop for professional printing," she claims. What remains an obstacle is that the print shop is part of the operations department, not MIS, and Buckley must establish a working relationship with that group to help ensure a cohesive strategy.

"I've made contact with them and sent some of my strategy papers in order to start a good working relationship," she declares. "I'm only just starting to formulate a corporatewide plan as to how all this should come together. I have to talk more to management about where we should be going and if we want to get into a mid-range on this as well."

Integrated strategy

The middle range gets complicated. Buckley is not clear whether the bank should invest in the Apollo Computer, Inc. and Sun Microsystems, Inc. workstations or wait for the next generation of PCs — machines based on the Intel Corp. 80386 chip — which will blur the distinction between the desktop and the mid-range. In addition, the bank has several Wang Laboratories, Inc. VS systems in place, and those also present a problem. "How do we integrate Wang into our corporate publishing strategy?" she wonders.

> "THE QUESTION for all corporations is, 'Who owns the corporate publishing strategy?' Operations has the print shop right now, and I don't think MIS wants to get into the business of running the print shop."
>
> BARBARA BUCKLEY
> MARINE MIDLAND BANK

While technology presents a major obstacle for Marine Midland, Buckley must also consider the management of corporate publishing. "The question for all corporations is, 'Who owns the corporate publishing strategy?' " she says. "Should it be MIS or Operations? Operations has the print shop right now, and I don't think MIS wants to get into the business of running the print shop. On the other hand, I don't believe Operations really wants to oversee the corporate publishing strategy or is capable of implementing it."

Buckley is facing an area devoid of role models. According to Seybold, virtually no large corporations have achieved a successfully integrated corporate publishing implementation.

"Right now, people have to get a sense of strategically where things are going before they can make tactical decisions about how to implement them," Seybold explains. "Things are changing so rapidly and so much is happening that people feel they can't afford to wait and are installing systems with the knowledge that they don't have the full corporate strategy in place. The one hopeful thing now is that, unlike with word processing in the '70s and PCs in the early '80s, people recognize what they are getting into, and it won't sneak up on them." •

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DIAL-INQ READER SERVICE NUMBER 53

Laser printers acquire skills for the office

BY TIMOTHY BAJARIN

Laser printers, once priced beyond the reach of all but the very largest organizations, are fast becoming an affordable component of in-house publishing systems.

In 1986, some 225,000 laser printers were shipped; by 1990, that number is expected to jump to 700,000. This growth in laser printer use will be driven by end users' increasing demand for high-quality output and a dramatic drop in the cost of this technology.

The growing phenomenon of desktop publishing has exerted a strong influence on the pricing and technology of laser printers, but it is also true that laser printers themselves helped to create the market that is now pushing them so strongly.

VENDORS must find a way to speed output if they want higher resolution printers to get into the general office anytime soon.

Crystal ball

In 1983, at a time when I was working on a report about the future of printers and searching the current market for an electronic publishing system my firm could use in its offices, one of our Asian clients showed us its prototype laser printers.

Although primitive by today's standards, the prototypes that I was shown displayed such promise that I was willing to commit myself in print to a prediction about the future of laser printer technology.

In our June newsletter back in that year, I wrote, "If this new breed of laser printers can be sold in the U.S. for under $5,000, it is conceivable that they could allow users in the very near future to publish their own documents at the personal computer level."

Vendors pull through

Atari Corp. recently announced a $1,495 laser printer that will tie directly to the company's ST line of microcomputers. The printer will share the memory of the ST's CPU, and, although the printer will be a bit slow, it eliminates the cost of the extra memory normally needed for the printer itself.

At least two Asian laser printer manufacturers are readying 8 page/min. printers for the market that contain 1M byte of memory. These machines are slated to be priced around $1,795 and scheduled to be available by June.

Higher speed printers, running at 18 page/min and selling for around $12,000, should be available this summer. This type of printer will finally give printer-sharing devices the chance to become part of normal office technology.

Research that will have significant impact on desktop publishing is now under way in three key areas. Better resolution, one of the areas of development, should soon be on its way to market. Printer manufacturers are endeavoring to provide high-speed low-cost output devices with resolutions of 400 and even 600 dot/in.

Actually, the technology to deliver these higher resolutions

Bajarin is executive vice-president of Creative Strategies Research International, a Santa Clara, Calif.-based firm providing consulting and market research services to the high-tech community.

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Our exhibitors list. (As of April 1, 1987.) A who's who of people who design, develop and produce hardware, software and peripherals for Macintosh. 3Com Corp., Abaton Technology Corp., Addison-Wesley Publishing Co., Adobe Systems, Inc., Advanced Computer Graphics, Advanced Elec. Support Prod., Inc., Affinity Microsystems, Ltd., Aldus Corp., ALSoft, Inc., Altsys Corp., Ann Arbor Softworks, Apple Programmer's & Developer's Assoc., Ashton-Tate, AST Research, Inc., Avantec, Inc., Bering Industries, Inc., Berkeley Macintosh Users Grp. (BMUG), Blackhole Technology, Inc., Blowhard Industries, Blyth Software, Inc., Borland International, Boston Computer Society, Boston Publishing Systems, Inc., Bravo Technologies, Inc., C.I. Tech International, Inc., Cambridge Electronics, Inc., Capilano Computing Systems, Ltd., CasadyWare, Inc., CE Software, Centram Systems West, Inc., CHA Services, Inc., Chang Laboratories, Inc., CNS, Cognition Technology Corp., CompServCo, Compu-Teach, Inc., CompuCover, Computer Expressions, Computer Museum, Computer Shoppe, Computer Shopper Magazine, Computer Ware, COMTREX, Ltd., Consulair Corp., Cortland Computer, Cricket Software, Inc., Data Tailor, Inc., DataSpace Corp., Davna Communications, DEST Corp., Digital, Etc., Inc., Dove Computer Corp., Dynamac Computer Products, Inc., Dynamic Graphics, Inc., E-Machines, Inc., E.I. duPont de Nemours & Co. (Inc.), Educomp, Erez Anzel Software, Ergotron, Inc., F.C. Brooks & Co., F.L.I., Farallon Computing, Ferranti-Dege, Inc., First Desk Systems, Inc., Flexware, Forethought, Inc., General Computer Co., Great Plains Software, Great Wave Software, Hayden Books/Howard W. Sams & Co., Hayes Microcomputer Products, Inc., Heizer Software, Hewlett-Packard Co., High Performance Systems, Inc., I/O Design, Inc., ICOM Simulation, Icon Concepts The Macazine, IDAC, Inc., ImageWorld, Inc., Infosphere, Inc., InfoWorld, Innovative Data Design, Inc., Intelitec, Internet, Invention Software, Jasmine Computer Systems, Kensington Microwave Ltd., Kent Marsh Ltd., Kinetics, Inc., KMW Corp., Krov Sign Systems, Language Processors, Inc., Language Systems Corp., Laserware, Inc., Layered, Inc., Letraset U.S.A., Levco, Linotype Co., Living Videotext, LoDOWN, Logic eXtension Resources, Lotus Development Corp., Lundeen & Associates, Mac Buyer's Guide/Redgate Comm. Corp., MacBriefs, MacMemory, Inc., Macropac International, MacTutor, MacUser Magazine/Ziff-Davis Pub. Co., Mainstay, Manx Software Systems, Inc., Meta Software Corp., Micah Storage Systems, Micro Planning International, MicroGraphic Images Corp., Microsoft Corp., MicroStore, Mindscape, Inc., Mirror Technologies, Monogram Software, Inc., Nantucket Corp., National Association of Dsktp. Pub., National Instruments Corp., Northeast Data Processing Supplies, Odesta Corp., Office Talk, Orange Micro, Inc., Palantir Software, Panamax, Paragon Concepts, Inc., PC World Communications, Inc., PEAK Systems, Peripheral Land, Peripheral Systems, Inc., Personal Bibliographic Software, Inc., Personal Computer Peripherals Corp., Personal Training Systems, Practical Computer Applications, Inc. (PCAI), Pro Plus Software, Inc., Prometheus Products, Inc., Quark, Inc., Radius, Inc., Relax Technology, Ribbon Land, Rodime, Inc., Peripheral Systems Div., Satori Software, Scott, Foresman/Little Brown, Silicon Beach Software, Inc., SmethersBarnes, SMS, SoftView, Software Discoveries, Inc., Solutions, Inc., Spectrum HoloByte, Springboard Software, SuperMac Technology, Symmetry Corp., Systat, Inc., T/Maker Co., Tacklind Design, Inc., Target Software, Inc., TeleRobotics International, Inc., The Macneal-Schwendler Corp., The Madson Line, The Rest of Us, THINK Technologies, Inc., TML Systems, Inc., TPS Electronics, Typesetting Service Corp., Unicom, Washington Apple Pi, Ltd., White Pine Software, Inc., WordPerfect Corp., Working Software, Inc., Zivad, Inc. And there are more to come! MACWORLD Exposition/Boston is the original Macintosh computer show. It's sponsored by MACWORLD, the Macintosh™ Magazine, a member of the CW Communications/Inc. family.

already exists, but manufacturers have not discovered a means of providing it to the public economically. A 400 dot/in. printer would likely sell in the area of $8,000.

Along with reducing manufacturing costs for these higher resolution printers, vendors must also find a way to speed the printer's output if they want these printers to get into the general office anytime soon.

ACTUALLY, the technology to deliver these higher resolutions already exists, but manufacturers have not discovered a means of providing it to the public economically.

Second, vendors are racing to deliver color output. This is a complicated technology, and low-cost color lasers are not on the visible horizon.

It is expected, however, that as color-graphics-based computers begin to replace alphanumeric workstations in today's offices, the demand for color output will escalate. A number of companies are working on providing this capability.

Howtek, Inc. in Hudson, N.H., is one of those firms hard at work in this area. Founded by Bob Howard, who gave us Centronics Data Computer Corp. parallel ports and Centronics printers, Howtek is actively involved in developing affordable color output devices. The company's Pixelmaster ink jet printer, which sells for $2,995, uses a plastic crayon, not wax, for its brilliant color effect.

Desktop typesetting

The third research quest involves the development of what might be called desktop typesetting machines.

This is also a complex technology, but a couple of firms are working to provide 1,200 and 2,000 dot/in. printers that could sell for a price of less than $10,000.

Mohawk Laboratory, based in Santa Barbara, Calif., has already developed a prototype of a product called the Photoprinter.

Using a mixture of analog and digital technology, this printing device can output material at about 2,100 dot/in. and potentially could produce high-quality master and camera-ready copy, ready for immediate printing. Although it is a bit slow, it could retail for a price of about $4,995.

Here to stay

A firm in Minneapolis is reportedly aiming to build a 1,200 dot/in. laser that could become a desktop typesetting device and sell in the range of $12,000.

Industry observers also say that Apple Computer, Inc. is working on developing a desktop typesetting machine that could be introduced in the near future.

With desktop publishing drawing more attention to the benefits of laser printers and new pricing and technology just around the corner, it is certain that laser printers are not only here to stay but will become increasingly vital office operations. •

Selected laser printer vendors

Apple Computer, Inc.
(408) 973-2222
Product: Laserwriter
Engine: Canon LBP-CX
Speed: 8 page/min
Price:$4,999

Product: Laserwriter Plus
Engine: Canon LBP-CX
Speed: 8 page/min
Price: $5,799

AST Research, Inc.
(714) 863-1480
Product: Turbolaser

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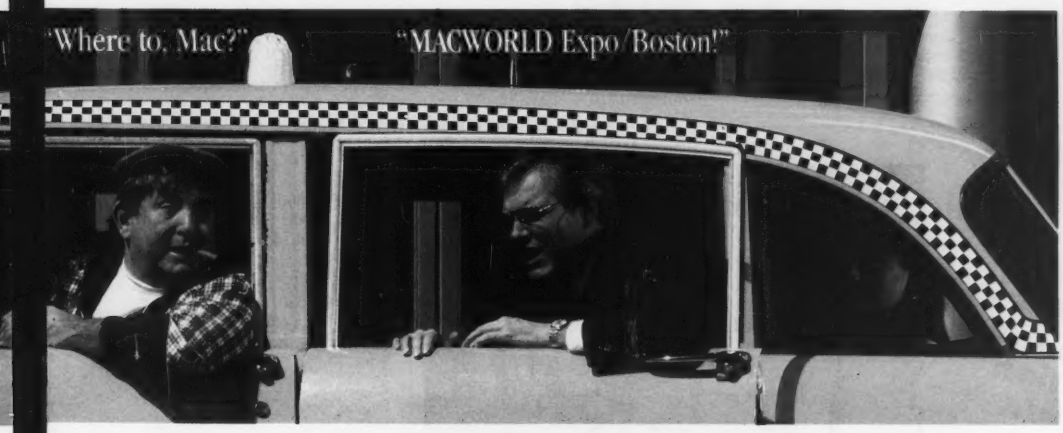

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Engine: Ricoh 4150
Speed: 15 page/min
Price: $6,995

CIE Terminals
(800) 624-2516
Product: LIPS 10
Engine: Konica
Speed: 10 page/min
Price: $2,995

Product: LIPS 10 Plus
Engine: Konica
Speed: 10 page/min
Price: $3,495 for 512K-byte, $3,595 for 2M-byte

Citizen America Corp.
(213) 453-0614
Product: Overture 110
Engine: Mita LP-X
Speed: 10 page/min
Price: $2,395

Cordata
(800) 621-6746
Product: LP-300
Engine: Canon LBP-CX
Speed: 8 page/min
Price: $2,995

Product: LP-300X
Engine: Canon LBP-CX
Speed: 8 page/min
Price: $3,895

CPT Corp.
(612) 937-8000
Product: LP-6
Engine: Canon LBP-CX
Speed: 8 page/min
Price: $2,500

Product: LP-8S
Engine: Canon LBP-CX
Speed: 8 page/min
Price: $3,500

Digital Equipment Corp.
(800) 258-1710
Product: LN03
Engine: Information not available
Speed: 8 page/min
Price: Contact vendor

Product: LN03 Plus
Engine: Information not available
Speed: 8 page/min
Price: Contact vendor

Product: Scriptprinter
Engine: Information not available
Speed: 8 page/min
Price: Contact vendor

Epson America, Inc.
(213) 539-9140
Product: GQ 3500
Engine: Ricoh PC Laser 6000
Speed: 6 page/min
Price: $2,495

Facit, Inc.
(603) 424-8000
Product: Model 4580
Engine: Ricoh LP4120
Speed: 12 page/min
Price: $9,500

Product: P7080
Engine: Ricoh 4081
Speed: 8 page/min
Price: $3,895

Product: P7150
Engine: Ricoh 4150
Speed: 15 page/min
Price: $6,495

Genicom Corp.
(800) 437-7468
Product: Model 5010
Engine: Hitachi SL100
Speed: 10 page/min
Price: $3,495 with IBM Diablo emulation, $3,695 with Hewlett-Packard Co. Plus emulation

Hewlett-Packard Co.
(800) 376-4772
Product: Laserjet Series II
Engine: Canon SX
Speed: 8 page/min
Price: $2,495

Product: Laserjet 2000
Engine: Canon LBP-20
Speed: 20 page/min
Price: $19,950

Imagen Corp.
(408) 986-9400
Product: Imageserver XP Model 7320
Engine: Canon LBP-20
Speed: 20 page/min
Price: $32,950

Qume Corp.
(408) 432-4000
Product: Laserten
Engine: Hitachi SL100
Speed: 10 page/min
Price: $2,795

Product: Laserten Plus
Engine: Hitachi SL100
Speed: 10 page/min
Price: $3,395

NBI, Inc.
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Continued on page S20

NETWORKING

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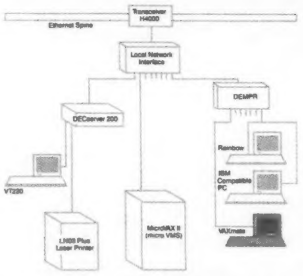

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Page-composition software

COMPANY	PRODUCT	COLOR OPTIONS	HARDWARE CONFIGURATION	HARD DISK REQUIRED	WORD PROCESSORS SUPPORTED	GRAPHICS PACKAGES SUPPORTED	NUMBER OF RULES	NUMBER OF SHAPES	MAXIMUM NUMBER OF TYPESTYLES	SIZE RANGE (IN POINTS)	PERMITS SCALING	PERMITS CROPPING	INSERTS, REMOVES OR MOVES PAGES	AUTOMATIC JUSTIFICATION	AUTOMATIC PAGE NUMBERING	PRINTERS SUPPORTED	PRICE	DIAL-INQ READER SERVICE NUMBERS
Addison-Wesley Publishing Co. (617) 944-6795	Microtex	None	IBM PC, AT, XT and compatibles/512K	Optional	ASCII files	Any printer-compatible graphics package	Unltd.	Polygons	Printer-dependent	5 to 36	Yes	Yes	All	Yes	Yes	Laserjet Plus, Imagen, QMS, Epson dot matrix, Proprinter, any Postscript device	$495	877
	Textures	None	Macintosh/512K	Yes	Macintosh ASCII files	Macpaint, TICT files	Unltd.	Polygons	Printer-dependent	5 to 24	Yes	Yes	All	Yes	Yes	Laserjet Plus, Imagen, QMS, Epson dot matrix, Proprinter, any Postscript device	$495	
Aldus Corp. (206) 622-5500	Pagemaker for the PC	Printer-dependent	IBM PC, AT and compatibles/640K	Yes	Wordperfect, Windows Write, Wordstar 2000 and 3.3, Multimate, IBM DCA format files, ASCII files	Windows Paint, Windows Draw, PC Paint, PC Paintbrush, 1-2-3, Symphony, Windows GDI packages	17 (plus reverse)	5+	Printer-dependent	4 to 127	Yes	Yes	Inserts, removes	Yes	Yes	Laserjet, Laserjet Plus Series II, Linotype, Linotronic, Windows-compatible dot matrix, any Postscript device	$695	878
	Pagemaker 2.0 for the Macintosh	Printer-dependent	Macintosh, Macintosh Plus/20M	Optional	Macwrite, Microsoft Word 1.0 and 3.0, Microsoft Works, Writenow, ASCII files	Adobe Illustrator, Cricket Graph, Cricket Draw, Macpaint, Macdraw, Fullpaint, Superpaint	17 (plus reverse)	5+	Printer-dependent	4 to 127	Yes	Yes	Inserts, removes	Yes	Yes	Laserwriter, Imagewriter, Linotype, Linotronic 100, 300, 500, Imagesetters, any Postscript device	$495	
Bestinfo, Inc. (215) 891-6500	Superpage	NA	IBM PC, AT and XT/640K	Yes	Major ASCII word processors	PC Paintbrush, Scangraphics	Unltd.	None	Printer-dependent	½ to 127	NA	No	All	Yes	Yes	Linotronic, Compugraphics, Varityper, any Postcript device	$7,000	879
Cyberresearch, Inc. (203) 786-5151	Cybertype	Color separation	IBM PC, AT, XT and compatibles/512K	Optional	Microsoft Word, ASCII files	Any package supporting Postscript devices, Houston Instrument plotters, Targa or Whips formats	Unltd.	10+ (plus freehand)	Unltd.	Unltd.	Yes	Yes	All	Yes	Yes	Any Postscript device	$495	880
	Cybermerge	Color separation	IBM PC, AT, XT and compatibles/512K	Optional	Microsoft Word, ASCII files	Any package supporting Postcript devices, Houston Instrument plotters, Targa or Whips formats	Unltd.	10+ (plus freehand)	Unltd.	Unltd.	Yes	Yes	All	Yes	Yes	Any Postscript device	$495	
Data Transforms, Inc. (303) 832-1501	Fontrix	16	IBM PC and compatibles/512K with CGA-compatible display	Yes	ASCII files	PC Paint, any Basic Bsave	Unltd.	8	160	4 to 25	Yes	Yes	None	Yes	No	Lasers, 24-pen, 9-pen, 160 different models	$155	881
	Printrix	16	IBM PC and compatibles/256K	Yes	Wordperfect, Microsoft Word, Wordstar	PC Paint, any Basic Bsave, ASCII files	Unltd.	2	160	4 to 25	Yes	Yes	Inserts, removes	Yes	Yes	Lasers, 24-pen, 9-pen, 160 different models	$165	
FTL Systems, Inc. (416) 487-2142	Mactex V2.0	Printer-dependent	Macintosh Plus/1M with external disk	Optional	Macwrite, Microsoft Word, proprietary, ASCII files	Any standard Macintosh graphics package	Unltd.	Unltd. (plus freehand)	120+	2* to 2,048	Yes	Yes	All	Yes	Yes	Imagewriter, any Postscript device	$750	882
G. O. Graphics, Inc. (617) 229-8900	Deskset	None	IBM PC, AT, XT and compatibles/640K with EGA, CGA or Hercules board	Yes	Wordperfect, Wordstar, Wordstar 2000, Displaywrite	Dr. Halo, PC Paintbrush, 1-2-3	NA	None	35	4 to 127	No	Yes	None	Yes	No	Any Postscript laser printer	$995	883
	Deskset Design	None	IBM PC, AT, XT and compatibles/640K with EGA, CGA or Hercules board	Yes	Wordperfect, Wordstar, Wordstar 2000, Displaywrite	Dr. Halo, PC Paintbrush, 1-2-3	NA	None	90	5 to 72	No	Yes	None	Yes	No	Any Canon laser printer	$1,295	
Good Ideas (617) 475-7238	Type-Set-It	None	IBM PC and compatibles/512K	No	Xywrite, Personal Editor, ASCII files	None	9	None	124,000	6 to 144	Yes	No	Inserts, removes	Yes	Yes	IBM, Epson dot matrix and compatibles	$395	884
IBM (800) 447-4700	IBM Solutionpac Personal Publishing System	None	IBM PC AT, XT 286/512K with DOS 3.3, Personal System/2 Model 30	Yes	Displaywrite, any supported by Pagemaker	Image Edit	40	NA	43	6 to 127	Yes	Yes	All	Yes	Yes	Personal Pageprinter	$553-$793	885
Image Network, Inc. (415) 967-0542	Xroff	None	Any system running Unix, VAX/VMS, MS-DOS	Yes	Troff	PIC	Unltd.	Unltd. (plus freehand)	10	4 to 48	Yes	Yes	All	Yes	Yes	Dataproducts, Xerox, DEC, HP, Imagen lasers	$950	886
IMSI (415) 454-7101	Desktop Publishers Graphics	None	IBM PC, AT, XT and compatibles/512K	No	ASCII files	Proprietary, Autocad, 1-2-3	Unltd.	4 (plus freehand)	21	Unltd.	Yes	Yes	None	No	No	Any dot matrix, ink jet or laser printer	$195	887
	Pageperfect	None	IBM PC, AT and compatibles/640K with EGA board	Yes	Microsoft Word, Wordstar, Wordstar 2000, Multimate, Samna	Proprietary, DP Graphics	Unltd.	4 (plus freehand)	Unltd.	6 to 30	Yes	Yes	All	Yes	Yes	Laserjet, Laserjet Plus, Laserwriter, any Canon or Cordata laser printer	$695	

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. Further product information is available from vendors.

COMPANY	PRODUCT	COLOR OPTIONS	HARDWARE CONFIGURATION	HARD DISK REQUIRED	WORD PROCESSORS SUPPORTED	GRAPHICS PACKAGES SUPPORTED	NUMBER OF RULES	NUMBER OF SHAPES	MAXIMUM NUMBER OF TYPESTYLES	SIZE RANGE (IN POINTS)	PERMITS SCALING	PERMITS CROPPING	INSERTS, REMOVES OR MOVES PAGES	AUTOMATIC JUSTIFICATION	AUTOMATIC PAGE NUMBERING	PRINTERS SUPPORTED	PRICE	DIAL-INQ READER SERVICE NUMBERS
Intergraph Corp. (205) 772-2000	DP/Publisher	16	Interpro 32C, Interact 32C workstations/6M	Yes	All via Gencode (SGML) translators	Intergraph IGE, Intergraph graphics applications software, other CAD and vector graphics via translators	Unltd.	Unltd. (using IGE)	100	Virtually unltd.	Yes	Yes	All	Yes	Yes	Laserwriter, any Postscript device	Contact vendor	888
Janus Associates (617) 354-1999	Superprint	None	IBM PC and compatibles/384K	No	ASCII files	PC Paint, PC Publisher, Multimate, 1-2-3	9	5	4	8 to 36	Yes	Yes	All	Yes	Yes	Laserimage 2000, any laser with HP or Canon emulation	$695	889
Knowledge Engineering (212) 473-0095	Just Text	Unltd.	Macintosh/512K	No	Proprietary, any text file	Macpaint, Macdraw	Unltd.	Unltd. (plus freehand)	Any Postscript face	2 to 255	Yes	Yes	Inserts, removes	Yes	Yes	Any Postscript device	$195	890
Letraset USA, Inc. (201) 845-6100	Ready, Set, Go	None	Macintosh/512K	No	Microsoft Word, Macwrite, ASCII files	Any package supporting Clipboard and Scrapbook	14	3	Unltd.	4 to 255	Yes	Yes	All	Yes	Yes	Imagewriter, any Postcript device	$395	891
Lexisoft (916) 758-3630	Spellbinder Desktop Publisher	None	IBM PC and compatibles/256K with EGA, CGA or Hercules board	No	Proprietary, ASCII files	Dr. Halo, PC Paintbrush, Autocad, 1-2-3	2	Printer-dependent	200+	Printer-dependent	Yes	Yes	All	Yes	Yes	Laserjet Plus Series II, Cordata 300X, any Postcript device	$695	892
Magna Computer Systems, Inc. (818) 986-9233	Magnatype	5	IBM PC, AT, XT, 386 and compatibles/640K	Yes	Proprietary, ASCII or DOS files	PC Paint, PC Paintbrush	Printer-dependent	Graphics package-dependent	2,000	Printer-dependent	Yes	Yes	All	Yes	Yes	Linotype, Compugraphic, Varityper, Autologic, any Postscript device	$5,250-$8,500	893
Megahaus Corp. (619) 450-1230	First Impression	None	IBM PC, AT, XT and compatibles/640K	Yes	Any IBM DCA File	PC Paintbrush, Autocad, Versacad, any HPGL package, 1-2-3	Unltd.	3	7	4 to 72	Yes	Yes	All	Yes	Yes	Laserjet, Interpress, DDL, any Postscript device	$895	894
Proton, Inc. (818) 765-4444	Fontasy	None	IBM PC, AT, XT and compatibles/512K	No	ASCII files	Proprietary	NA	Unltd. (plus freehand)	28	NA	Yes	Yes	None	Yes	Yes	IBM, Epson and compatibles, Radio Shack DMP	$69.95	895
PS Publishing, Inc. (415) 433-4698	PS Compose	None	Macintosh Plus/1M	Optional	Microsoft Word, Macwrite	Macpaint, Macdraw, Adobe Illustrator, Cricket Draw, Superpaint	Unltd.	6 (plus freehand)	Unltd.	4 to 127	Yes	Yes	All	Yes	Yes	Compugraphics 84/8600, any Postscript device	$800-$2,000	896
Publisher Control Systems, Inc. (715) 526-6547	Rim View	None	IBM PC, AT and compatibles/512K with Tall Tree Systems' JLaser card	Yes	Any package with Windows	Proprietary, any package with Windows	Unltd.	—	50 to 60, printer-dependent	3 to 150	Yes	Yes	All	Yes	Yes	Any Canon- or Ricoh-driven laser printer	$2,500	897
The 'Puter Group (608) 273-1803	Pagewriter	None	IBM PC, AT, XT and compatibles/640K with CGA compatibility	Optional	ASCII files	PC Paint, PC Paint Plus	Unltd.	Unltd. (plus freehand)	Unltd.	Unltd.	Yes	No	None	Yes	No	Laserjet Plus and compatibles, any Postscript device	$295	898
	PC-Preview	None	IBM PC, AT, XT and compatibles/640K with CGA compatibility	Optional	ASCII files	Proprietary	Unltd.	2	Unltd.	Unltd.	Yes	No	None	Yes	No	Any Compugraphic MCS	$1,495	
Quark, Inc. (303) 934-2211	Quark Xpress	Printer-dependent	Macintosh/512K	Recommended	Proprietary, ASCII files	Proprietary, Macpaint, Macdraw, Fullpaint, Superpaint, Adobe Illustrator, Cricket Draw	Unltd.	4	Printer-dependent	Printer-dependent	Yes	Yes	All	Yes	Yes	Any Postscript device	$695	899
Scenicsoft, Inc. (206) 776-7760	Scenicwriter	None	IBM PC, AT and compatibles/384K	Yes	MS-DOS, ASCII files	PC Paintbrush, Deluxe Paint	Unltd.	3	Unltd.	1 pt. to 6 in.	Yes	No	None	Yes	Yes	Laserjet, any Postcript device	$695	900
Softcraft, Inc. (619) 944-0151	Fancy Fonts	None	IBM PC, AT and compatibles/256K	No	ASCII files	TIFF, PC Paintbrush files	Unltd.	None	Unltd.	3 to 200	Yes	Yes	All	Yes	Yes	Laserjet, Canon laser printers, most dot matrix	$180	901
	Fancy Word	None	IBM PC, AT and compatibles/256K	No	Microsoft Word	TIFF, PCX files	Unltd.	None	Unltd.	3 to 200	Yes	Yes	All	Yes	Yes	Laserjet, Canon laser printers, most dot matrix	$140	
Software Publishing Corp. (415) 962-8910	Harvard Professional Publisher	None	IBM PC, AT and XT, Deskpro, Tandy 3000, Vectra/640K	Yes	IBM DCA or ASCII files	Dr. Halo, PC Paintbrush, PC Paint Plus, Windows Paint	Unltd.	1	9	6 to 72	Yes	No	Moves, removes	Yes	Yes	Laserjet, Laserwriter, Epson MX/FX series, IBM graphics printers, any Postscript device	$695	902
	PFS:Personal Publisher	None	IBM PC, AT, XT and compatibles/512K, MS-DOS 2.0 or higher	No	ASCII files	Macpaint, any PC graphics via a snapshot utility	NA	All but circles	10	10 to 48	Yes	Yes	None	Yes	No	Laserjet, Laserwriter, dot matrix	$129	
The Software Shop (516) 785-4422	Command Typographer	None	Macintosh Plus/1M, 800K floppy disk	Optional	ASCII, text files	Scrapbook or PIC documents	Unltd.	4	Unltd.	1 pt. to 148 in.	Yes	Yes	All	Yes	Yes	Laserwriter, Imagewriter, Mergenthaler L100, L300, L500, Linotype, various plotters	$495	903
Springboard Software, Inc. (612) 944-3915	The Newsroom Pro	None	IBM PC, AT, XT and compatibles/512K with CGA board	No	Proprietary, ASCII files	Proprietary	None	2,000	5	8, 15, 30	Yes	Yes	None	No	No	Spirwriter 7, Proprinter, Okidata 192, Toshiba P351, Epson LQ1500	$130	904
SWFTE International Ltd. (302) 658-1123	Laserware	NA	IBM PC and compatibles/45K	No	All	All	4	1	9	6 to 30	No	No	None	Yes	Yes	Laserjet, Laserjet Plus	$99.95	905

COMPANY	PRODUCT	COLOR OPTIONS	HARDWARE CONFIGURATION	HARD DISK REQUIRED	WORD PROCESSORS SUPPORTED	GRAPHICS PACKAGES SUPPORTED	NUMBER OF RULES	NUMBER OF SHAPES	MAXIMUM NUMBER OF TYPESTYLES	SIZE RANGE (IN POINTS)	PERMITS SCALING	PERMITS CROPPING	INSERTS, REMOVES OR MOVES PAGES	AUTOMATIC JUSTIFICATION	AUTOMATIC PAGE NUMBERING	PRINTERS SUPPORTED	PRICE	DIAL-INQ READER SERVICE NUMBERS
Syntactics Corp. (408) 727-6400	Crystal Publishing System	None	IBM PC, AT, XT and compatibles/640K	Yes	Proprietary	Macpaint, Bit Map files	Unltd.	—	Printer-dependent	Printer-dependent	Yes	Yes	All	Yes	Yes	Laserjet, Laserwriter, Imagen, QMS, any Postscript device	$895-$12,495	906
Unison World (415) 848-6666	Newsmaster	None	IBM PC, AT, XT and compatibles/256K with EGA, CGA, Hercules monochrome and compatible boards	No	ASCII files	Printmaster Plus, Art Gallery I, Art Gallery II	NA	286	11	6 to 60	No	Yes	None	Yes	No	Laserjet Plus, Epson FX, RX, LQ and compatibles, IBM graphics printers and compatibles, Okidata, Toshiba, Kyocera Laser Printer	$99.95	907
West End Film, Inc. (202) 232-7733	Pagework	Up to 32,000	IBM PC, AT, XT and compatibles/512K	Optional	ASCII files	Artwork, Chartwork, Brushwork	Unltd.	100	12	1 to 1,000	Yes	Yes	All	No	No	AST, any Postscript device	$750-$1,450	908
White Sciences, Inc. (602) 967-8257	Pagebuilder	16	IBM PC, AT, XT and compatibles/384K with Tall Tree Systems' JLaser card or equivalent with 1M-byte memory	Yes	Textbuilder ASCII files	DFX Autocad, Versacad, Computervision, proprietary	Unltd.	10	36	3 to 60	Yes	Yes	All	Yes	Yes	Laserjet, Laserwriter, QMS, any Canon- or Ricoh-driven laser printer	$495	909
Xerox Corp. (800) 822-6221	Xerox Desktop Publishing series: Ventura Publisher edition	8	IBM PC, AT, XT and compatibles/512K with EGA, Compaq color or Hercules monochrome board	Yes	IBM DCA files, Wordperfect, Microsoft Word, Wordstar, Multimate, Xerox Writer, Window Write, Xywrite	Gempaint, Gendraw, PC Paint Plus, DFX Autocad, 1-2-3	Unltd.	5	3	1 to 254	Yes	Yes	All	Yes	Yes	Laserjet, Laserwriter, Xerox 4045 and 4020, AST Turbo Laser, various dot matrix	$895	910

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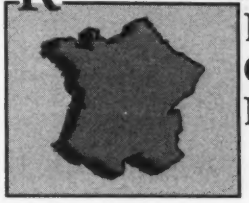

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Product: NBI 908
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Product: LC-800 series
Engine: NEC
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Office Automation Systems, Inc.
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Engine: TEC
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Product: QMS-PS 2400
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Product: VT-600
Engine: Information not available
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Xerox Corp.
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DIAL-INQ READER SERVICE NUMBER 56

Coming soon . . .

IBM recently made public the coming availability of its Personal Pageprinter, a laser printer intended for use as part of its Personal Publishing System.

Employing laser/electrophotographic technology, the Pageprinter's memory, printer control functions and fonts are resident in the host.

The unit has a resolution of 300 by 300 dot/in., an 8-in. writing line and a printing speed of up to 6 page/min.

The tabletop unit weighs 35 lbs and produces high-quality documents combining text, graphics and images.

The Pageprinter is scheduled to be available in the third quarter for an announced price of $2,199.

Make these "people" laugh, and you could win $100 worth of software.

Announcing the 1987 Computerworld button contest!

Every year, as all you button freaks know, Computerworld distributes tens of thousands of buttons at trade shows around the country. For several years now, against our better judgment, we have been letting you, our readers, write these buttons. To our surprise, you have written some good ones (like those shown here). So, we're doing it again.

We're looking for a few good slogans — witty, relevant, SHORT (these are small buttons), and at least moderately clean. You may send in your entries on the form below or a copy.

But you may NOT send us everything that comes into your head. Our offices aren't big enough to handle all that paper! Please take the time to narrow your ideas down to the two best you can come up with (test them on your friends).

All entries will be shown to our panel of judges, who will be tied to their chairs until selections are complete. Six winning slogans will be picked, and everyone who sent in one of those slogans will be eligibile for a prize. If you are the only one to send in a winning slogan, you win the prize. If more than one person had the same intelligent idea, we'll pick the prize winner out of a hat. Prize winners will receive a $100 certificate good towards the purchase of software from a friendly neighborhood computer store.

All decisions of the judges will be final, and no representations as to their competence, skill, or sense of humor are being made. All entries will become the property of CW Communications/Inc. Deadline for entries is May 1, 1987 at our offices in Framingham, MA.

YES, I'd like to enter Computerworld's ridiculous button contest. My two slogans are written below. I understand the rules above, and realize that these entries will become the property of CW Communications/Inc. I hope your judges can read!

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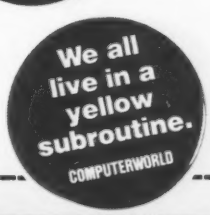

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But no matter what you feed the 5010, the result is laser perfect. Whether it's word processing that approaches typeset quality or high resolution graphics, the Genicom 5010 leaves nothing to the imagination.

It's Convertible. With Genicom's unique personality cartridges, the 5010 converts into multiple identities. Like a Diablo® 630, an IBM® Graphics Printer, or a Hewlett-Packard® LaserJet Plus for starters. Changing personalities is easy. Simply plug in a new cartridge. In seconds, the 5010 is up and running with any computer worth mentioning, plus the very latest laser software.

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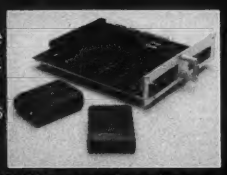
When it comes to print styles, the 5010 converts to your personality. Choose from a variety of fonts. Insert up to four font cartridges at once, and vary type styles within the same document.



Take Command. The 5010's prominent control panel is sophisticated simplicity. Just push a button to select fonts, input cassette, forms overlay, paper size, characters per inch, lines per inch and form feed. Even the 5010's diagnostic readout speaks your language, with a 32 character LCD that informs you of printer status in plain English.

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National

CONTINUED FROM PAGE 59

tion path for designers to continue to upgrade their equipment," according to Mel Thomsen, a semiconductor analyst with Dataquest, Inc.

The NS32532 is said to perform at 30 MHz and process up to 15 million instructions per second (MIPS).

The average speed — in what the company called Digital Equipment Corp.-equivalent VAX MIPS — is 8 to 10 MIPS, according to the vendor.

The chip will feature an internal memory bandwidth of 240M byte/sec. and will address 4G bytes of memory.

National says the chip will support development languages such as C, Fortran, Pascal, Cobol and Ada and will include 370,000 transistors.

Encore commits to chip

Encore Computer Corp. is said to be one of the first to commit to the 32532 chip. Encore plans to unveil in 1989 a 1,000-MIPS parallel processing superminicomputer system to use 128 32532 chips, according to the vendor.

National would not disclose any other vendor commitments.

There will be no need to develop new software to take advantage of the high-speed chip, according to Anil Uberoi, group marketing manager for National's Series 32000 sector.

Existing Unix-based software supported by National's 32-bit line will be compatible with the new chip and will automatically take advantage of its increased power.

Aside from high-end Unix-based workstations, other 32532 applications include robotics, fault-tolerant transaction processing systems and peripherals such as laser printers.

No price was given for the 32532. Uberoi said the chip will run about three times faster than National's current high-end 32-bit chip, the NS32332, which sells for $198.

Memory unit

CONTINUED FROM PAGE 59

byte configurations, the RAM disk/SST is expected to work primarily alongside Unisys B1855 through B1885 and B1955 through B1985 processors, according to the company.

The memory product complements Zitel's existing RAM disk/MLX, which supports up to 128M bytes of add-on storage for the former Burroughs mid-range and large-scale mainframes.

Although the B1800 and B1900 systems are often found in small and medium-size companies, they also serve as departmental or work group processors in big businesses and as front ends to Burroughs hosts.

In corporate environments, the low-end machines are typically used for the kinds of batch and transaction processing applications that are I/O-bound and thus demand relief in the form of additional semiconductor memory, according to Welch.

Operates at same speed

Because it is built around conventional 256K-bit RAM chips, the RAM disk/SST operates at the same basic speed as ordinary main memory.

But through special firmware and hardware, the add-on unit attaches to a CPU in the manner of a disk subsystem rather than internal storage.

Such an interface makes the RAM disk/SST "limited only by a processor's own inherent delays" and accounts for the product's improved access times, Welch explained.

Housed in a 28-in. high-tower cabinet, the storage system will be installed and maintained by Unisys and distributed domestically by Denver-based DSI, Inc. and Virtual Technology, Inc. in Troy, Mich., according to the vendor.

The RAM disk/SST costs $59,995 in a 32M-byte version and $89,995 for the 64M-byte configuration.

Ultimate

CONTINUED FROM PAGE 59

it can tie directly into an IBM Systems Network Architecture network.

According to Ultimate spokesman Timothy Peters, the Ultimate operating system that was demonstrated on the 9370 does not have all the features of Pick yet, but it is sufficient to run a Pick application.

All Pick features will be added before shipping, Peters said.

The four models of the 9370 series reportedly can handle from 16 to more than 200 users.

The machines offer from 4M bytes to 16M bytes of main memory and up to 30G bytes of disk storage. The system will range in price from $90,000 to $600,000.

Ultimate holds the exclusive right to market the Pick operating system on the 4381 and 9370.

Four Ultivax II models

Ultimate also has introduced four models of the Ultivax II, a Digital Equipment Corp. Microvax II configuration, designed and engineered by DEC, that features co-resident Ultimate operating system and a proprietary coprocessor.

In addition, Ultimate introduced the four models of the 1400 series, a low-end offering based on the Motorola, Inc. 68020.

The 1400 series, made by Honeywell Italia, will handle from eight to 64 users.

National Advanced Systems

Goodyear makes tracks with its National Advanced Systems mainframe

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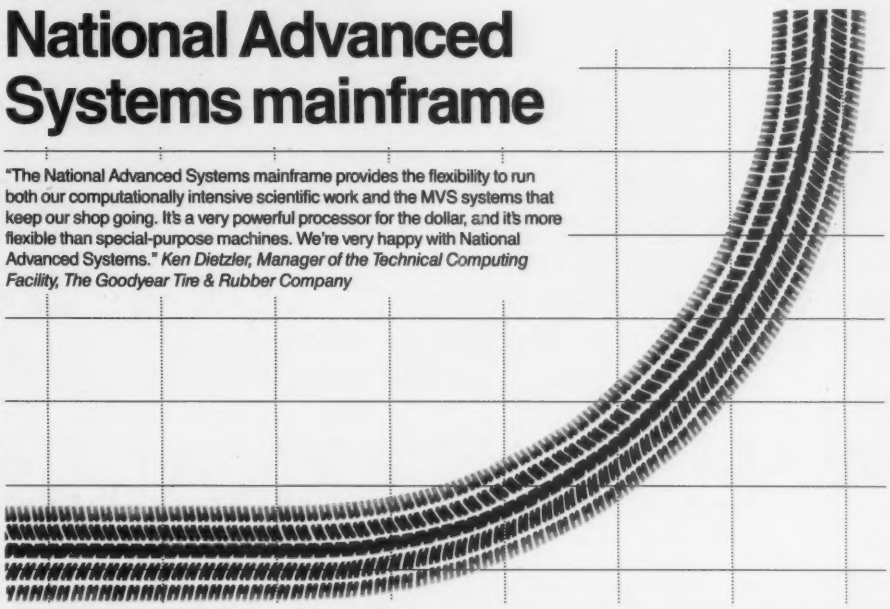

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When making a software acquisition, confidence in the vendor is as important as product quality. And when you're evaluating NOMAD2, here are a few important facts to keep in mind.

- NOMAD2 is a product of the world's largest information services corporation, The Dun & Bradstreet Corporation.
- 80% of NOMAD2 reflects suggestions from our user base.
- There are over 100,000 NOMAD2 users, many of whom belong to local or international users' groups.
- 150 man years have been invested in the ongoing enhancement of NOMAD2.
- 85% of those who try NOMAD2, buy it.

When you study all these facts, one message becomes clear. We are committed to providing the highest level of customer satisfaction and support. To standing behind our products. To meeting every need of our users.

History proves we've done all that for the companies on this list. We'd like to do it for you, too.

NOMAD2, which runs on your mainframe or ours, is another step in the NOMAD evolution that began in 1975. For information, here's another good name to remember. Deborah Cox, D&B Computing Services, 187 Danbury Road, Wilton, CT 06897. Or call her at (203) 762-2511.

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In search of

FROM PAGE 59

ware. It can be free of conceptual DASD cylinder limitations and does not have to bring unnecessary data fields into memory when browsing a file. At the same time, it does not have to sacrifice performance required during random-access processing.

With changes in concepts, as opposed to hardware modifications, relational software could browse several cylinders of a table concurrently. It could allocate the table across several DASD units and then have multiple sub-tasks access different parts of the table.

The software could also browse a table containing many columns and read into memory only the one or two columns of data it needs. This could be done by reorganizing fields within a block so that data is stored as columns instead of rows. It would then be practical to use what is called channel programming to read only the field or fields that are needed.

Filling cylinders

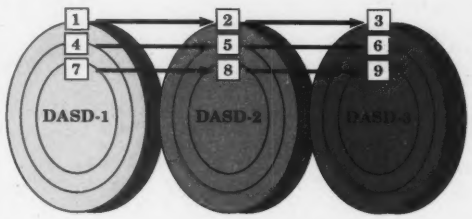
For most DASD files, the current approach is to fill all cylinders allocated to it on the first DASD unit before using any of the allocated cylinders of a second unit. Many files never get allocated to more than a single DASD unit. This restricts parallel processing because a DASD unit is limited to one active read/write head.

Under current concepts, parallel access of a file is achieved only when it is intentionally allocated to multiple DASD devices and only when multiple on-line transactions or programs are processed against the same file.

The process could be improved by letting relational software assign cylinders across several DASD units. The software could use multiple tasks to search each DASD unit concurrently with the same search criteria where the original sequence of a table is not critical. If the original sequence must be maintained, some parallel access can still be achieved by using additional buffers to read the next cylinder.

As a further example, if you have eight DASD units assigned to store tables and a particular table is eight cylinders big, the software should assign one cylinder to each DASD unit. In browse mode, all eight cylinders could be read concurrently, possibly in as little as one-eighth the time it would take using current concepts. In random mode, performance would be spread across all units, eliminating overuse of one unit while having low activity on another.

Proposed method of assigning cylinders to a table



CW CHART: MITCHELL J. HAYES

To read multiple cylinders concurrently would require more memory. You could, however, reduce the impact if you only read the specific fields that are to be used. This brings up the next recommendation: record blocking concept vs. table-section blocking concept.

Current relational tables are stored using record concepts designed to store data on key punch cards. That is, a record consists of several fields located next to each other. When tape started being used by second-generation hardware, it was found to be more efficient to block multiple records together.

With this structure, it would not be practical to use channel programming to read Field A and Field C of each record in the block and not read Field B at the same time. A block containing 100 records of three fields each would require 300 more channel instructions than are used today to read just one block. If the block were rearranged into columns, however, it would be practical to read only the Field As and Field Cs. The common fields in the block could be grouped where all Field As were together, followed by all Field Bs followed by all Field Cs.

Suppress data transfer

With the data arranged in columns, only three additional channel instructions would be required to read in all the Field As and Field Cs of a block while bypassing all Field Bs. The process would use the "suppress data transfer" feature of channel programming to bypass the Field Bs. This would reduce memory requirements and permit more blocks of data to be processed in one-channel program execution.

With data quickly available in browse mode, these techniques may also reduce dependency by the relational process on alternate indexes.

The reason for this is that one column of an entire table could be read into memory quickly. Relational software's dependancy on alternate indexes often slows random processing of updates because each update affects all indexes of the updated table.

Peterson is assistant vice-president for computer services at Morgan Guaranty Trust Co. in New York.

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See Codex at booth #1620 at the ICA show, May 18-21.

NEW PRODUCTS

Processors

General Robotics Corp. has announced that its **Python** family of 32-bit Digital Equipment Corp. Q-bus-compatible Unix engines support AT&T's System V, Release 3.

One- to two-user System V, Release 3 is standard on all Python, Python/Jr. and Super Python computer systems, the vendor said.

System V, Release 3 is said to provide extended networking features capable of producing seamless local-system clusters and remote networks. The software is a version of National Semiconductor Corp.'s port for System V, Release 3.

Multiuser licenses are priced from $650. A full networking option is priced from $350.

General Robotics, 23 S. Main St., Hartford, Wis. 53027.

Graphics systems

Peritek Corp. has announced the **VCK-Q/U** board set combining three Motorola, Inc. 68010-based intelligent graphics boards.

The board set's primary color display of 1,024 by 1,024 by 24 bit/pixel shows 256 colors from a palette of 16 million. Each board includes a color graphics controller featuring graphics primitives, windows, zoom, panning and vertical scroll as well as 1M byte of on-board random-access memory, serial I/O ports and a small computer systems interface to a dedicated external hard disk.

Prices range from $15,500.

Peritek, 5550 Redwood Road, Oakland, Calif. 94619.

Data storage

Eastek Corp. has unveiled the **Eastek system**, an optical disk-based document processing system designed to be integrated with application software programs.

The system is said to use Eastek's proprietary software and components that coordinate the activities of the devices and provide an automated method for managing images of documents. The modular system uses the Apollo Computer, Inc. Domain local-area network operating at 12M bit/sec.

A typical configuration includes a 20 page/min. scanner, four workstations, a 32-cartridge library unit and a 15 page/min. laser printer. It stores 1.6 million documents and is priced at $250,000.

Eastek, 10 Bloomfield Ave., Pine Brook, N.J. 07058.

Terminals

Intelligent Technologies has announced the enhanced **Bisync Exchange 3270 Communications Systems.**

The system features a set of presentation services including multiple session control, extended attributes, configurable keyboard and color mapping. It also offers dynamic LU capability and compatibility with the vendor's Systems Network Architecture exchange.

The Bisync Exchange 3270 is priced at $695.

Intelligent Technologies, 737 Lincoln Centre Drive, Foster City, Calif. 94404.

Printers/Plotters

Gnu Business Information Systems, Inc. has announced **custom font cartridges** for the Hewlett-Packard Co. Laserjet, Laserjet Plus and Laserjet Series II printers.

Gnu offers a selection of 200 fonts, and said from four to 11 of them can be placed on a single custom cartridge. GNU custom cartridges are priced from $199 with up to four standard fonts. Additional fonts can be loaded for $45 each.

Gnu, 100 Hilltop Road, Ramsey, N.J. 07446.

Input devices

Aedex Corp. has announced the **Aedex MSR-100**, a magnetic-stripe credit card reader for point-of-sale environments.

The MSR-100 is said to read all data encoded on credit cards. It was designed to connect between a computer and a dumb terminal or cash register and function in a software transparent mode. It reads both Track 1 and Track 2 data and transmits in ASCII format to the host computer.

The MSR-100 system with power supply is priced at $495.

Aedex, 1070 Ortega Way, Placentia, Calif. 92670.

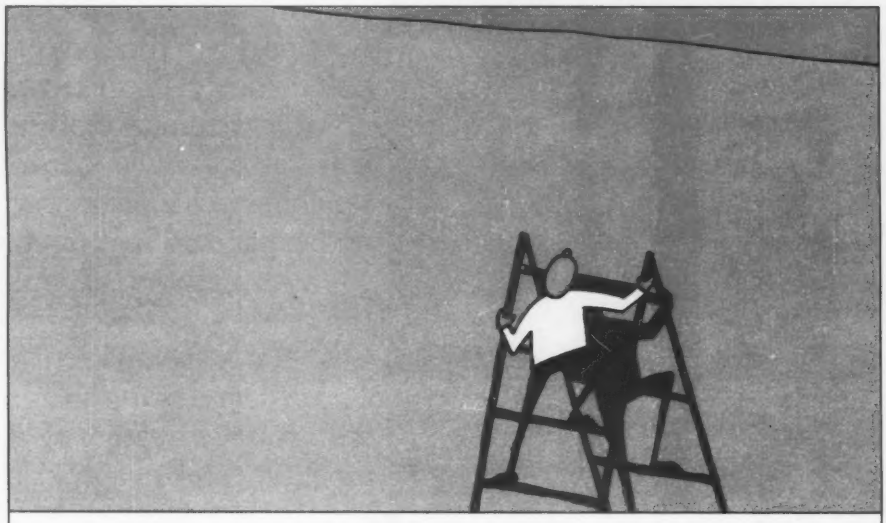
Maintenance equipment

Pioneer Research has announced the **PR 4042 portable disk drive qualifier.**

The PR 4042 is said to emulate most disk drive controllers. It features custom formatting capability and a 24M bit/sec. data rate. It is software controlled and is said to be capable of handling up to 16 units simultaneously. It monitors and diagnoses drive and interface problems, formats disk drives off-line, aligns heads and verifies packs.

The PR 4042 is priced at $11,000.

Pioneer Research, 1745 Berkeley St., Santa Monica, Calif. 90404.



The problem with most 4GLs is they're finished before you are.

And where does that leave you?

With the final, tricky ten percent of your application yet to write, and no 4GL left to write it with. Sound familiar?

If so, try INFORMIX®-4GL.

Never again will you have to switch to C or COBOL to truly customize your application. Instead, INFORMIX-4GL provides an all encompassing syntax for every aspect of your application building.

So once you're programming in INFORMIX-4GL, you never have to leave it. And considering all it can do, you may never want to.

Now, for instance, you can write in just ten to twenty pages of 4GL code, applications that would take hundreds of pages with C.

That's because INFORMIX-4GL was designed from the start to be an application building language. It's built around the full implementation of ANSI Standard SQL. And features Custom Screen Generation, Custom Menu Building, a built-in Report Writer and Windows.

What's more, INFORMIX-4GL works with UNIX,™ MS™-DOS and Networked DOS operating systems. And, of course, it's compatible with INFORMIX-SQL—our popular, proven DBMS. So files you build with one, you can access with the other.

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You're about to uncover a way to make your IBM system performance grow, even when your budget won't...

System enhancement from EMC. It's the

EMC president and CEO Richard Egan (left) consults with a customer.

"Many companies say they listen to the customer. We go further. We actively solicit *from the customers what their needs and problems are, and develop products which solve them."*

Do you get the feeling your Data Center is being stretched to the breaking point? Users want to put more and more of their work on the computer. Top management wants to see more and more productivity out of its information system.

And you're supposed to do it all with less and less money.

The good old days, when you could count on a system upgrade in your budget whenever you needed it, are gone forever.

What you need now is a different kind of solution. A smarter approach that lets you boost system performance without blowing your budget.

What you need, in fact, are the system enhancement products of EMC Corporation.

Where the smart IBM shops are turning.

Since 1979, EMC has been pioneering the system enhancement industry. We are now a proven answer for MIS centers that are trying to squeeze every ounce of performance out of their mainframes.

By enhancing your system's performance, EMC can help you cope with the pressures created by modern data base management applications, communications networks, and other computer-intensive functions.

At EMC, you'll find main storage upgrades that increase system performance by up to 30% over comparable IBM memory. Special I/O controllers that double terminal capacity. Main storage upgrades for the IBM 4381 that reduce the time for storage functions by half.

And the number of ways we can boost your system is growing all the time. We offer main memory, cache memory, disk systems, disk controllers, communications controllers and more.

They're all products that help you get the most out of the system you have now. While spending as little as possible. For instance, we offer system enhancements for the 3080 that will save you almost 35% in cost over similar products.

smart way to improve your system.

Yet as important as performance is, it's not all EMC has to offer.

Performance improvements that won't quit.

We get letter after letter from IBM shops praising our reliability. In fact, because we use the latest production technology in all of our products, we actually have a better reliability record than IBM itself.

That's no surprise. Exceptional reliability is something we've worked for every day we've been in business. And it's why EMC is accepted in so many places where failure is simply unacceptable.

Time Saved

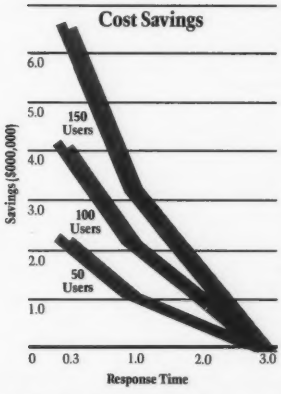
System Response	Transaction Per Hour	Time Saved Per Task	Time Saved Per Day
3.0 sec	180	—	—
2.0 sec	208	8.1 min	64.8 min
1.0 sec	252	17.1 min	136.8 min
0.3 sec	371	30.9 min	247.2 min

Speeding up system response by only a few seconds can add several "person hours" to your daily productivity.

No huge upgrade expenses.
No software conversions, migrations or modifications.

Most of our products are installed in 15 minutes. Yet they have an immediate and profitable impact on your system's performance. Without affecting your IBM service contract or other support agreements in any way.

At a time when you're expected to accomplish more than ever with your computer system, for less money than ever, EMC's system enhancement products may be just the miracle you've been looking for.



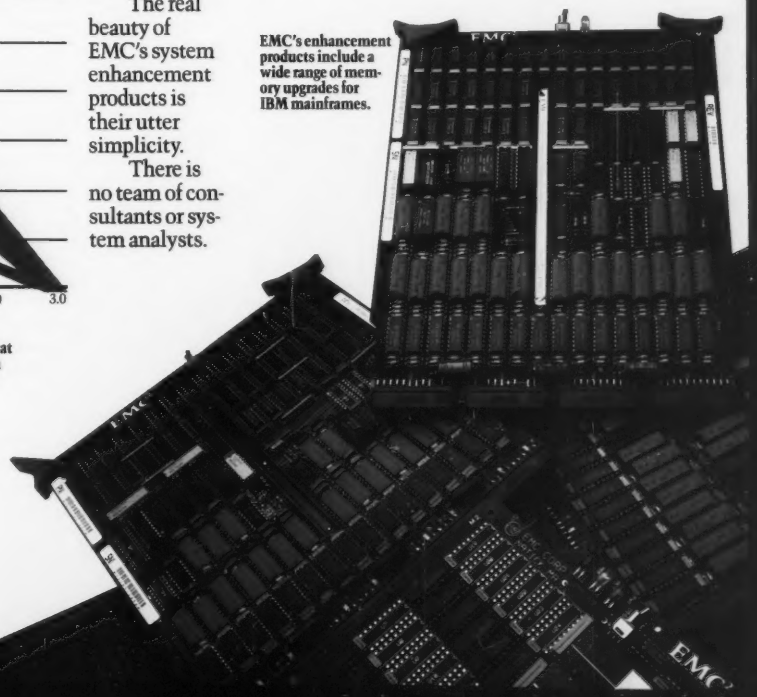
Studies reported by IBM show that faster system response times can result in dramatic cost savings.

How simple can it get?

The real beauty of EMC's system enhancement products is their utter simplicity.

There is no team of consultants or system analysts.

EMC's enhancement products include a wide range of memory upgrades for IBM mainframes.



Who are we to improve on IBM?

"We take new technology today and apply it to existing systems. Whereas the CPU vendors would rather apply that new technology to their next generation of hardware."

Unlike CPU vendors, EMC devotes its most talented people to the art of enh

It's a fact that EMC's system enhancement products can make many IBM mainframes perform better and last longer than IBM can.

It's also a fact that a growing number of computer users are agreeing with EMC's approach.

For example in 1985, when a lot of people stopped buying computer systems, they kept right on buying the products of EMC. Our net income for that year was up 173%. And over the last three years, our income is up an average of 176% per year.

Today EMC is a $66.3 million company with offices worldwide.

What explains our success? And why is EMC so much better at enhancing IBM systems than IBM is?

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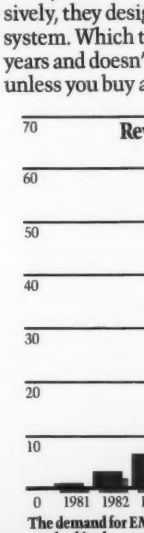
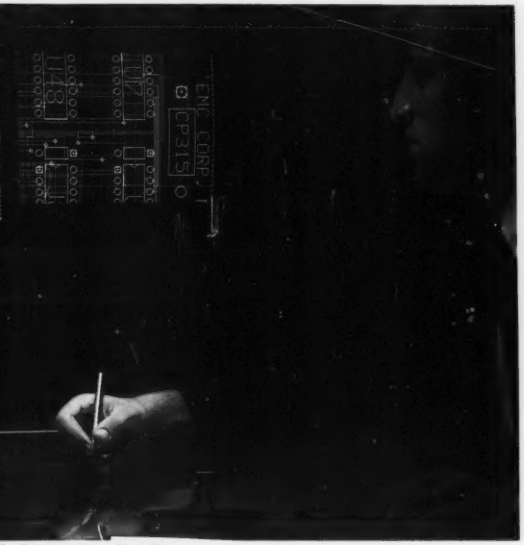


The demand for EM resulted in the con in the 1980's.



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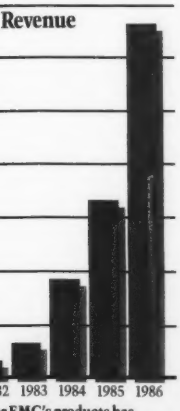

r EMC's products has
company's dramatic growth

On the other hand, when EMC sees that same technology, we develop a product you can use immediately. In the system you've got right now.

And that's the difference in a system enhancement company. Where IBM has other things to worry about, it's all we ever do at EMC. We find ways to make your system work better. Overcome bottlenecks. Extend the life of your mainframe.

So when a useful technology becomes proven and accepted, EMC passes along the benefits to you right away.

That's why, when IBM recently announced a megabit memory chip for its high end 3090 systems, we weren't too impressed. Because we'd already been supplying the same technology to smart DP shops for more than a year.

Everyone needs improvement.

IBM users aren't the only lucky ones. We offer the same system enhancement advantages for the other leading computer vendors. Like Hewlett-Packard, Digital, Prime and Wang.

By maintaining our own IBM computer rooms, EMC has first-hand knowledge of system performance issues.

In fact, we're consistently ahead of the industry with important innovations.

We were the first to offer 64K bit RAMs for superminis. First with a 32-port terminal controller. First to come up with mainframe memory capacity for VAX computers. First with a number of high performance Direct Access Storage Devices for superminis.

The best of everything.

With EMC you get the best performance for your system. The most reliable technology. The most affordable solution.

And you're getting all of that without taking chances on an unknown company.

After all, we may not be as big as IBM. But in our own specialized way, we're definitely an improvement.

EMC introduced megabit memory chips long before IBM.

If our support can satisfy IBM customers,

As part of our support, EMC evaluates your system performance and recommends ways to enhance it.

"Customer service like EMC's is a true pleasure."

No customer in the computer industry is more demanding about support than an IBM customer. Especially when it comes to putting system enhancement products into their mainframes.

So we think it means something that IBM customers aren't simply satisfied with EMC's support.

They're downright ecstatic about it.

Service as advanced as our products.

When EMC pioneered the concept of system enhancement, we knew that you don't buy technology alone. You also buy a company.

So we went a step further: we pioneered new levels of service.

EMC now offers a wide range of service options tailored to your way of doing business, including priority replacement programs and critical site maintenance with four hour response.

Most importantly, EMC was the first company in the industry to offer a lifetime warranty, and it is still the hallmark of the way we do business. If our product ever fails, for any reason, we will replace it. Immediately, with no questions asked. For as long as you own your system.

In fact, if you even suspect our product is at fault, we'll send you a free replacement.

And if IBM decides to charge you for a service call they think is our fault, we'll reimburse you for it. Every single penny.

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it can satisfy anybody.

Then someday, when you move up to another IBM system, we'll give you a trade-in credit on your system enhancement products. We'll even give you the credit if you move to a different vendor.

Not even IBM supports you like that.

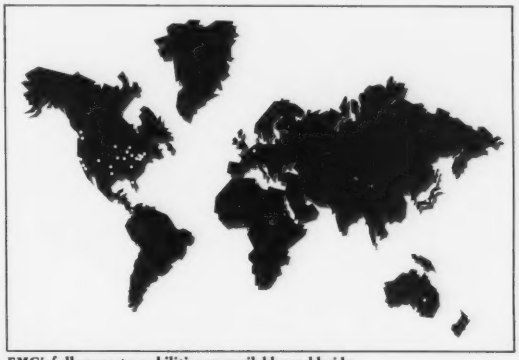
Not just system enhancers. System partners.

Before we sell you a system enhancement product, we first evaluate your system and talk with you in depth.

What's wrong with your system? What would you like to see improved? Where are the bottlenecks?

That's where some of our best products have come from over the years. Like our 3880 cache storage upgrades. An IBM customer said he couldn't find an affordable solution—so we created one.

Who else in this business listens to you so closely?



EMC's full support capabilities are available worldwide.

Ask any satisfied customer.

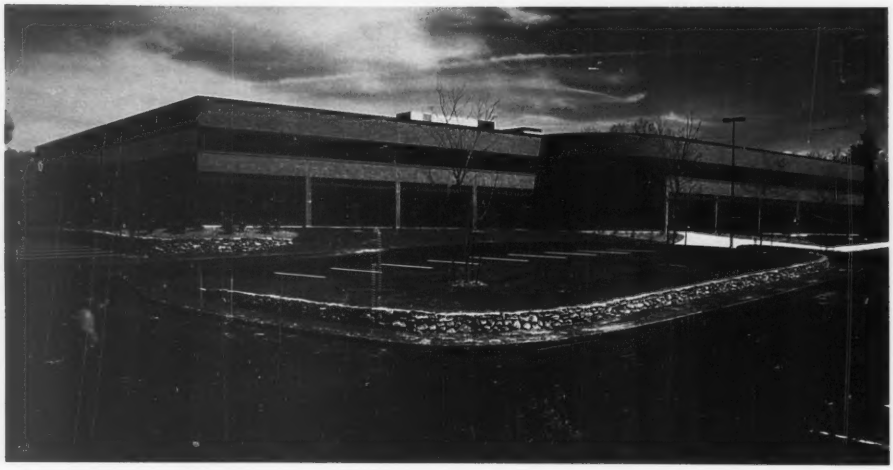
We could go on talking about how good our support is. Our worldwide field service. Our fast installation. Our continuously available customer support.

But here's a better idea: call us and ask for the names of real IBM customers who have also become EMC customers.

Ask them what they think of us. They'll tell you what every IBM customer has always known—that support is a 3-letter word. Only now, you can spell it EMC.

Service offerings from EMC include priority replacement programs and critical site maintenance.

Find out how EMC can help you use your system for all it's worth.



Thanks to EMC's system enhancement products, tightening your MIS belt doesn't have to mean giving up the performance you need.

We can help extend the life of your current system, delay expensive upgrades, and still meet user demands and corporate goals.

Find out why so many smart IBM customers are also becoming EMC customers. Call 1-800-222-EMC2 (in MA, call 617-655-6600) for more information. Or write EMC Corporation, Natick Industrial Center, Natick, MA 01760.

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Which comes first — development or specs?

Incremental system design makes the most of incomplete specifications

BY HENRY ERIC FIRDMAN

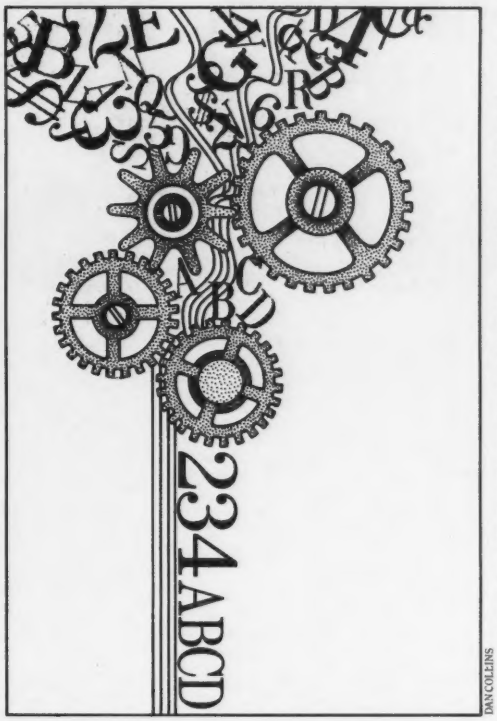
Incremental system design (ISD), one of the most important concepts artificial intelligence researchers ever conceived and investigated, now acts as an intrinsic feature of the AI approach to problem solving. But the concept of ISD is somewhat misunderstood within the software engineering community, which condemns ISD as a "hacker's approach" and sees it as a threat to the classic software design methodologies the community has been developing for years.

Confusion about ISD grows as expert systems development turns from a sectarian activity into a commercial endeavor and as more conventional programmers get involved in the development process.

In the following quotations from Cutter Information Group's "Expert Systems in the Workplace" (1986), a market research report based on interviews with expert systems developers, one can see confusion about ISD and its role in expert systems development.

"That's what's different with expert systems: You're able to start writing a whole bunch of stuff before you actually know what you're doing."

Maybe you think you're able to start writing 'stuff,' but you definitely should not. It is silly to do something before knowing what you are doing; expert systems development is certainly no exception. ISD does not imply that prototyping starts before you know what you are prototyping.



DAN COLLINS

The ISD process takes advantage of problem decomposability. Decomposability assumes that one can first single out a small subset of the whole problem, develop, debug and implement a working prototype for this subset and, as additional knowledge becomes available, develop and debug a series of successive prototypes until the entire problem is solved.

For hackers only

"There's nothing wrong with developing expert systems interactively, but this rapid prototyping that people claim is so great is, in my opinion, for hackers who like to program. It is for people who don't want to sit down and think about the problem.

"You can't convince me that you discover anything by going very quickly to the computer rather than sitting and thinking about it and doing a paper model or an interactive block diagram, or something like that.

"I don't find the prototyping ability of these shells to be particularly valuable. When you use rapid prototype, you become locked into that view of things. I prefer to go through the paper design first because it will allow me to come out with systems that are much more functional, capable and ultimately better designed.

Again, ISD does not imply that you do not have to think about the problem or create a paper model. Actually, ISD has nothing to do with either of these alternatives, per se. ISD comes into play when you think about the problem but realize that you are unable to think it through because the problem is too complex and you need to know more about it.

The lesson is clear: To use technology properly, one must understand it. To use ISD, one must understand what it is, what it is not and what its place is in the general picture of expert systems development.

Generally, ISD is an antidote to a major flaw of all currently existing software design methodologies. In a typical software design methodology, the processes of specification design and system development are strictly separated, with specification design preceding system development.

In other words, complete and

- **Specifications are made to be changed**
- **Good news for commercial expert systems**
- **Methodology or hackers' black magic?**

Firdman is president of Henry Firdman & Associates, a Lexington, Mass.-based consulting firm specializing in artificial intelligence and expert systems. He is former director of the Artificial Intelligence Laboratory at the Russian Academy of Science.

precise system specifications must be provided before the system development process can even start.

Once these specifications are ready, they are broken down into relatively independent subspecifications with separate programmer teams assigned to work somewhat independently on each of these subspecifications. In theory, the subsystems resulting from that work can be put together into the final system relatively painlessly — ideally without additional debugging.

In reality, the programmer teams in classic software design cannot work independently: Specifications that are thought to be complete are actually not; interaction between specs is a necessary element of the design process. It is difficult, if not impossible, to develop complete and precise specifications for midsize, let alone large-scale, systems.

In addition to the obvious quantitative reasoh for this difficulty — the larger the system, the harder to develop its specifications — development of a large-scale software system is an inherently iterative process.

Specification design and system development are not separate, but rather tightly interdependent processes. Complete and precise system specifications appear as an effect rather than a prerequisite of system development. In actual practice, system development is an experimental tool for understanding the problem to be solved.

ISD is aimed at dealing with this interdependency problem. To develop a software system incrementally, no complete and precise specifications are required. The first system prototype is developed, based on what is currently known about the problem in question. In running this prototype, system developers figure out necessary corrections and modifications. They change specifications accordingly and, based on the revised specifications, develop and run the second prototype and so forth. Thus, ISD is an iterative loop of successive specification refinements and prototype developments.

Two important points should be mentioned:

Rapid prototyping is the core of ISD. For ISD to make any sense, each round of prototyping should be completed in a period of a few weeks to a few months. Dedicated LISP machines such as Symbolics, Inc. 3600 and Lisp Machine, Inc.'s Lambda and hybrid knowledge-based system development tools, such as Inference Corp.'s Automated Reasoning Tool and Intellicorp's Knowledge Engineering Environment, are specifically designed to be effective and efficient, though expensive, tools for rapid prototyping.

By definition, in ISD the final system specifications can appear only after the system has been developed. These final specifications are required for documentation, maintenance and support. By virtue of permanent mutual feedback between the ongoing specification design and system development processes, the fit of the specifications and the specified product at any stage of development can be significantly better than in the case of a conventional software development methodology.

Maintaining a balance

Why does the software industry consider ISD to be something new to conventional software development and intrinsic to only AI? After all, all large software systems are designed incrementally. The product is usually the effect of many development iterations and releases. The critical difference between such incremental design and ISD as defined above is that the former is a case of redevelopment while the latter is a case of genuine incremental design.

THE LARGER the system, the harder it is to develop its specifications. Development of a large-scale software system is an inherently iterative process.

Redevelopment is practically the only method of incremental software design available to conventional software developers because traditional software is, by design, purely procedural. Procedures, or programs, cannot be developed incrementally; unpredictable side effects and interaction between program parts make incremental design virtually impossible. Simply put, one cannot freely take code out of and put code into an already developed and debugged program.

For years, a major trend in artificial intelligence has been to represent most domain-specific information declaratively — that is, as data — and to provide general-purpose procedures for problem solving. The advantage of declarative representations lies in the modular representation of knowledge and, therefore, the elimination, or at least the reduction, of side effects and interaction between knowledge chunks.

This trend maintains deep philosophic and even historical foundations. The controversy between proponents of declarative and procedural knowledge representations has been a subject of active discussion in the AI community for about 20 years.

The advantage of procedural representations is their efficiency, mainly the result of easy and natural procedural representation of knowledge, which guides the problem-solving process. Another advantage is that most applications must

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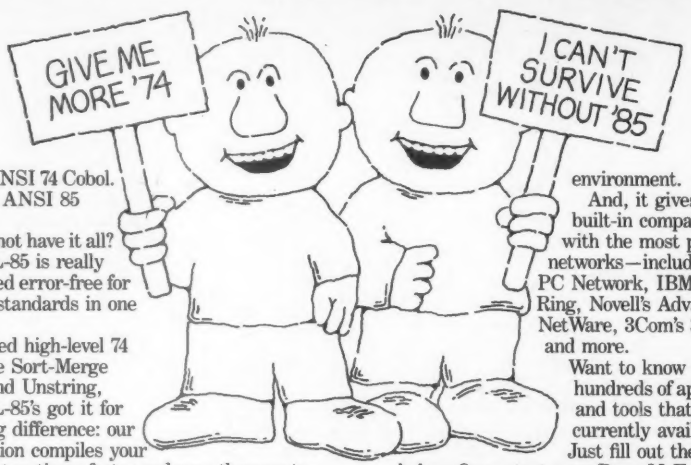

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run in a dynamically changing world, so that interactions must be effectively represented.

Indeed, declarative, or modular, knowledge representation — as opposed to procedural knowledge representation — allows one to develop knowledge incrementally. The greater the part of a system represented declaratively, the easier ISD will be.

Since using purely declarative representations in real-life systems is impossible, a system developer involved with ISD should maintain a balance between the declarative and the procedural parts of knowledge representation. This will subsequently create a balance between the part of the artificial intelligence system that can be designed incrementally and the part that must be redeveloped. Finding the right balance is currently more an art than a science.

Thus, the main conceptual features of ISD are as follows:

- Systems development is considered an experimental tool for understanding the problem to be solved.
- The development process appears as a loop of successive specification refinements and corresponding prototypes.
- System specifications are one of the effects — rather than only a prerequisite — of system development.
- At any stage of ISD, current specifications accurately specify the current prototype. The deviation between the two is less than in classic software development methodology.
- If properly used, ISD lends itself to highly modular and easily modifiable and maintainable software products.
- Performance evaluation, maintenance and support become an inherent part of the system development process.

Myths about ISD

"In summary, my advice to others would be, Don't get suckered in by this being different from any other, more conventional development approach. Don't believe that you have to go in and do prototyping and things like that. There's no question this is a different approach — how you build a knowledge base and how you acquire the information — and that languages like LISP and Prolog are better suited for it.

"Beyond recognizing that and working within those constraints, I would not try to become too different, because when you get there — that is, when you're through with the design — what do you do then?"

This quotation demonstrates two misconceptions of ISD. First of all, ISD has nothing to do with specific languages such as LISP and Prolog even though it is easier — but not necessary — to perform ISD in the LISP environment or in Prolog. Second, ISD has nothing to do with porting the prototype from one language to another or from one piece of hardware to another — it is hardware- and language-independent.

Like the preceding quotes, a great deal of the information about ISD that flies around is just a myth. These myths can be broken down into two groups.

The first group of myths result from ignorance and misunderstanding; hence, they are usually ridiculous:

- ISD is a tool for demonstrating success as early as possible.
- ISD is good for prototyping but unacceptable for delivery.
- ISD provides no portability across various hardware configurations.
- ISD provides no compatibility with available programming skills.

These and similar myths are usually created by the following groups of people:

— Research and development professionals who are in the business of developing fast prototypes and who have never delivered a product.

— Consultants or neophytes who have never gone beyond the first prototype.

— Developers of small-scale or non-artificially intelligent expert systems who usually could get by without ISD.

— System developers who have failed to develop an expert system for some other reason, usually project management related, but blame it on ISD.

— Programmers who have not properly planned development and delivery. For example, they might have developed the system prototype in one environment and found themselves unable to port it to another.

— Programmers who unsuccessfully have tried to do ISD in Cobol or Fortran, believe that it is intrinsic to only LISP or Prolog and thereby develop prejudices about, rather than expertise in, all these languages.

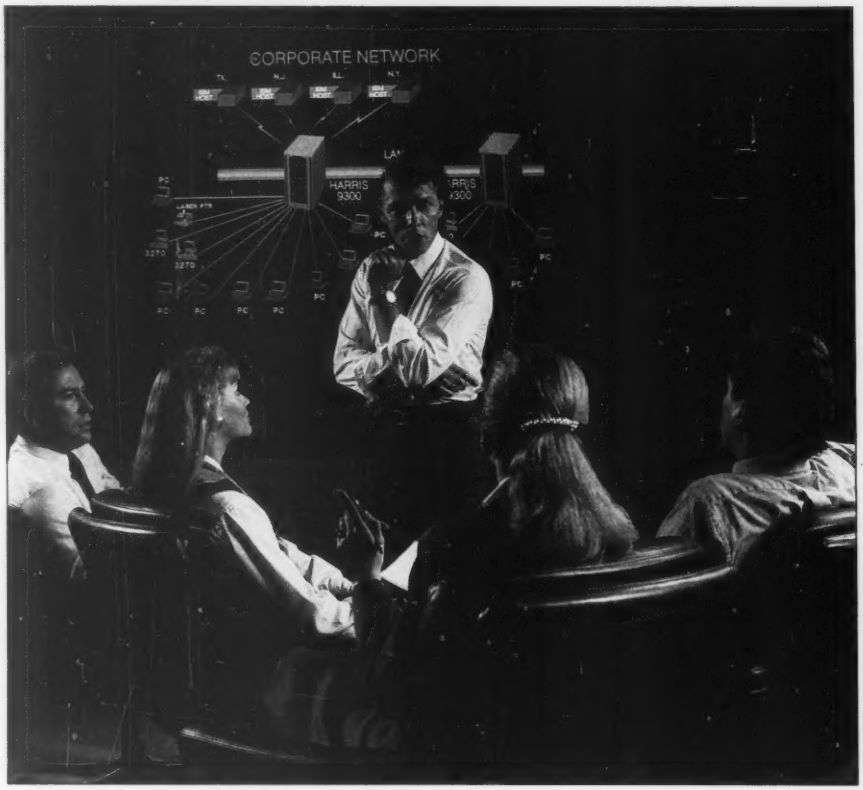
The second group of myths is born of more objective reasons, such as the AI community's lack of elaboration on what ISD really is:

- ISD is for people who do not want to think about the problem.
- ISD implies no specifications and discipline of software engineering.
- ISD results in "mashed code."
- ISD ignores maintenance issues.

These ISD myths are more serious and, as such, should be addressed by champions of artificial intelligence technology. No question concerning these myths should remain unanswered.

These myths are fostered by one underlying, and incorrect, view: that ISD is a complete expert system design methodology that replaces conventional ones. In fact, ISD is only an idea or, in flashier terms, a paradigm.

As such, it is only the conceptual base for a new software design methodology that has yet to be developed. Although a few people are able to apply ISD successfully by using this design methodology implicitly, this application is still an art



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rather than a true methodology.

"The biggest thing you've got to watch out for is the tendency to continually add doodads. You have to stop yourself because it's so easy to change and add fancy stuff that doing this gets out of hand. You can continually keep adding and adding and adding."

If you find yourself in this position, it means you are taking part in a project that maintains no objectives, milestones or project management at large. It means you are playing with technology rather than applying it. However, ISD is aimed at commercial expert systems development and does not exclude project management and discipline.

An outline of an ISD-based software design methodology includes three major topics: project management, specification management and change management.

ISD-ORIENTED project management is easier than that of conventional software, since even a prototype demonstrates meaningful performance at each stage of the project. It may perform poorly, but it does perform.

Project management. Contrary to the conventional perception that it is essentially uncontrollable, ISD requires tight project management. While ISD itself does not guarantee a project's ultimate success, proper project management does.

ISD-oriented project management begins prior to the project itself, during the application selection and feasibility study. The feasibility study supplies almost all the necessary information for the following tasks:

- Putting together a development team.
- Identifying stages and establishing goals in terms of system performance at each stage.
- Determining the set of intermediate milestones that have a prescribed system functionality.
- Defining the set of appropriate benchmarks, tests and performance-evaluation procedures.

With the development team, initial specifications and the aforementioned information at hand, one can get down to developing a prototype that demonstrates the feasibility of the entire project. Upon achieving each intermediate milestone, the set of subsequent milestones can be reconsidered in light of the results obtained.

It should be noted that ISD-oriented project management is, in a sense, easier than that of conventional software, since even a partially completed prototype demonstrates meaningful performance at each stage of the project. It may perform poorly in terms of the scope of expertise and/or running time, but it does perform, thereby solving a gradually increasing number of problems.

Obviously, the current performance determines the direction for further work on the project. Therefore, partial prototypes should be used on a commercial basis as soon as possible to provide critical feedback for system improvement.

Specification management. ISD does not rely on complete, precise system specifications: Such specifications are not provided prior to system development.

However, this does not mean that no specifications are required. On the contrary, they are essential to successful expert system development. One should keep in mind, though, that these specifications remain incomplete and imprecise throughout all stages of system development. They are refined and elaborated simultaneously with prototype development as the project proceeds.

Initial specifications result from the feasibility study, the first and most critical stage of expert systems development. Initial specifications must be documented, then read and approved by all participants — funding management, prospective users, domain experts, project management, knowledge engineers and the expert system designers. Specifications are created to be changed and updated, but they must be visible and permanently maintained.

Change management. In the ISD environment, change is not incidental. It is inevitable, and, as such, it must be planned for and built into all strategies and schedules. In other words, change must be managed. Change management includes the development and implementation of strategies for performance evaluation, expertise validation, product development and release, maintenance and support.

ISD is part of a new software design methodology based on intermingling specification design and system development, rapid prototyping and the representation of domain-specific information as data rather than procedures. The whole methodology has yet to be developed, but its philosophical emphasis is on specification management, project management and change management.

Some of the issues involved in this methodology are not yet completely understood, which causes a great deal of confusion in the software engineering community. It is up to AI practitioners to clarify the issues and turn ISD from a blend of art and black magic into a commonly accepted and usable methodology. •

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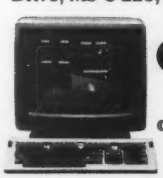

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Are you a corporate officer or a consultant?

The reporting structure of top MIS departments reflects managers' climb up the corporate ladder

BY ALAN RADDING

The way MIS is structured often reveals its standing in the corporate scheme of things. Every organization is different; each corporate structure and set of management titles develops according to both design and tradition, and each feels the influence of the character of the corporation and the trends within its particular industry.

It would be difficult to draw definitive conclusions from comparisons of corporations. Yet, in surveying the largest MIS departments in a variety of industries, several trends are apparent.

MIS is moving higher in the corporate structure — from a service function within a department, such as administration or finance, to recognition as a department in its own right or as an independent operating division on par with other divisions. Top MIS managers are taking on the status of full-fledged members of the corporate management team as peers of other top managers rather than service functionaries, technocrats or, worse yet, techies.

One such MIS manager, Leonard Jacob, as vice-president of information systems, has reached the highest level in computing at Miller Brewing Co. in Milwaukee. Jacob reports to a senior vice-president of administration, who, in turn, reports to the president, neither of whom are systems people.

Reporting to Jacob are six managers: a division controller and the managers of development, technical services (which includes communications), the data center, user services and client services, which is a staff position rather than a management position.

The information systems division Jacob heads has existed since April 1985. At that time, top management created the separate division because, according to Jacob, "They realized we were doing a lot more than payroll." Previously, the computer systems department came under the authority of the controller, which is a financial position.

The change in reporting procedures brought formal recognition of the strategic role that his division could play in the company, according to Jacob. "We've only been a division for a year and a half, but I'm considered a peer of the other division heads," he remarks.

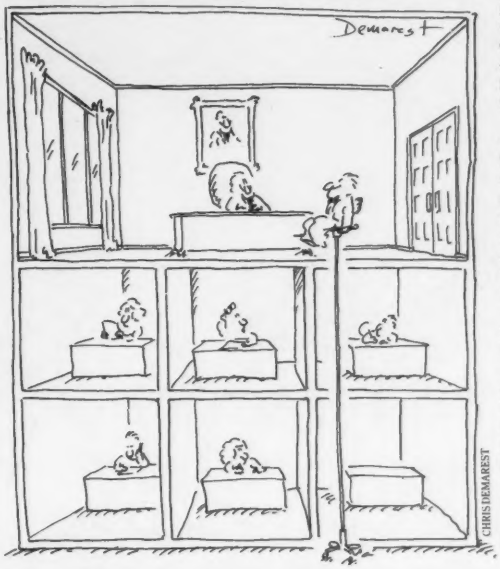
The classic corporate structure starts with a vice-president, such as a vice-president of information systems, who reports to a top-level corporate executive, such as the chief executive officer, chief operating officer, president or chairman.

Reporting to the vice-president of information systems is the MIS director. Under the MIS director are one or more managers, such as a manager of computer operations or a manager of applications. Finally, on the lowest managerial tier are supervisors, sometimes called project leaders, team leaders or group managers.

How closely an organization adheres to the classic structure depends on the industry and the particular organization, notes Eric Janssen, a top management recruiter for Source EDP. In some industries, vice-presidential titles proliferate at several different levels, he notes.

"Banking seems to offer the most titular inflation," notes Tom Davenport, director of research at Cambridge, Mass.-based Index Systems, Inc., who suggests that almost everyone in bank management is a vice-president.

A growing tendency is to depart from the classic corporate structure in an effort to streamline the organization. "It was becoming much too unwieldy. Now we're seeing a little flattening, the elimination of some levels of structure," Davenport says, applauding the effort.



CHRIS DEMAREST

The information czar

What does not surface is any groundswell of support for the title of chief information officer (CIO), a sort of information czar on par with the chief financial officer who enjoys direct access to the CEO.

"[The title of CIO] is an arbitrary term, sort of a shorthand for the highest ranking information manager, but, in our experience, companies don't like it, and managers don't use it because it sounds self-aggrandizing," Davenport claims. "People may like to think they are [the CIO], but they don't say it."

George DiNardo, vice-chairman of Mellon Bank Corp. in Pittsburgh, is a veteran computer systems manager and an outspoken advocate of centralized, high-powered computing. DiNardo and Fidelity Systems Co. President Michael Simmons hover as close to the concept of a CIO as one gets without bearing the actual title.

DiNardo's background combines both advanced business

Radding is a Boston-based author specializing in business and technology.

- **Trend away from service-based structure**
- **Managers steer clear of CIO title**
- **Mobil, Mellon Bank, The Hartford surveyed**

school and technical training. Despite his lofty title, he says, "I am a mechanic."

Some people consider the CIO as an information systems manager who reports directly to the CEO, Source EDP's Janssen says. In general, the higher in the structure an employee reports to, the more clout he holds.

The actual title of the so-called CIO is usually some variation of the corporate vice-president's, such as executive vice-president of information systems, Janssen notes. When information systems become so important to an organization that a CIO is necessary, the systems department is restructured as an independent division or subsidiary, and the potential CIO is made head of that division with a more conventional title.

WHEN INFORMATION systems become so important to an organization that a CIO is necessary, the systems department is restructured as an independent division or subsidiary, and the potential CIO is made head of that division with a more conventional title.

Different industries reflect different organizational needs. At Mobil Oil Corp., computing is decentralized, with systems management departments within each operations division. The structure of these departments is similar, reports Joe Bailey, manager of systems computer services for the exploration and producing (E&P) division in Houston. Bailey functions as a traditional MIS manager with responsibility for data processing and telecommunications. Below him, his department maintains the structure of a traditional MIS department.

Bailey reports to both the president of the E&P division — the top management position in that division — and to a corporate computer manager at the company's New York headquarters.

Ultimately, the highest corporate information systems manager at headquarters will report to a senior executive vice-president of finance, one notch below the president and CEO. The structure, in place for several years, works well, Bailey says.

Mobil, like other energy companies, has gone through some difficult years, which resulted in personnel reductions and budget cutbacks, but the budget for systems and computer services was not cut as drastically as that of other departments, Bailey notes.

Only recently have the company's computer systems managers been included in strategic decision making. "First, you need the right people in the jobs before the change [to strategic management participation] can take place," Bailey maintains. In the past, he says, MIS departments were held back by "bit chasers instead of managers."

'The systems are the product'

The banking and financial industries lead in the practice of accepting computer professionals as top business managers, says Index Systems' Davenport, citing John Reed, chairman of Citibank N.A., as a businessman who came from a systems background. Another is Harvey Golub, CEO of IDS Financial Services, Inc., in Minneapolis.

The reason for this acceptance is simple: In finance, "the systems are the product. It is the systems that generate the paper," Davenport notes.

"The computer is the production machinery of a bank," Mellon Bank's DiNardo adds — as critical, he says, to the operation of a financial company as the assembly line is to General Motors. The same may be said of the airline industry, which depends on computerized reservations and other automated systems. American Airlines' Bob Crandall is another top corporate officer who came from a systems background, Davenport points out.

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MIS asks, 'What's in a name?'

'A title by any other name would smell as sweet,' they say

The issue of corporate titles recently gained importance for MIS as milestones in the race for status in relation to traditional corporate managers in an organization.

Titles trace an upward spiral as the role of corporate computing expands. The first corporate computing managers often carried a "DP manager" title, reflecting the dominant function the machines handled — data processing. The DP manager evolved into the "director of management information systems" as the concept of corporate computing evolved.

Most recently, MIS has been shortened to "information systems" and encompasses more than traditional computing functions. The vice-president or director of information systems is now responsible for such things as telecommunications, electronic publishing and desktop computing. In fact, the concept of information systems is so broad that it can accommodate virtually anything in an era already dubbed The Information Age.

All the above names for the computing function still see widespread use. Scanning the titles of members of a national organization of top corporate computing managers reveals the diversity in titles:

- Executive vice-president of technology and communications.
- Vice-president of computer operations.
- Director of DP and information systems.
- Manager of DP.
- Vice-president of communications and DP.
- Director of computer systems.
- Manager of information systems.
- Director of information systems and communications services.
- Vice-president of information management.
- Director of information facilities.
- Vice-president of MIS.
- Vice-chairman.

All these titles reflect the top computer management post in a major corporation.

While executives may privately chuckle at the importance read into titles, they are also highly attuned to the career implications involved even in the most innocuous-sounding title changes. They know that if Romeo and Juliet's last names had been different, the outcome of the play would have been different. •

ALAN RADDING

computing function comes under the aegis of Fidelity Systems Co., which maintains a staff of about 750 people.

Fidelity Systems President Michael Simmons is the top computing employee in the entire organization, according to Richard Johnson, senior vice-president of information services. Johnson, along with two executive vice-presidents, represents the next tier of top management at Fidelity Systems, reporting directly to Simmons. "From a corporate standpoint, vice-presidents, executive vice-presidents and senior vice-presidents are all the same. We're all on equal footing," Johnson notes. The differences in degree of responsibility among the various positions are related to function, not title, Johnson explains.

Reporting to Johnson are employees who also hold vice-president titles and some who hold director titles. The other executive vice-presidents have vice-presidents and directors reporting to them as well.

Turn on a dime

In the management structure at Fidelity Systems, "the least significant title is director," Johnson says. Managers report to directors. The formal structure, however, is not particularly important at Fidelity Systems. "Even though we have all the charts [of corporate structure], we're all capable of picking up a mop. That's why we can turn on a dime," Johnson says. Flexibility and fast response are critical in the intensely competitive financial management industry.

In addition to its formal structure, Fidelity Systems is managed by an operating committee consisting of 18 people, including Johnson, the two executive vice-presidents, vice-presidents and directors. The operating committee sets policy and direction for the systems company.

Simmons reports directly to Fidelity Investments' chairman of the board. As a sign of the computer systems' importance to Fidelity Investments' operations, Simmons is a member of a committee consisting of only five corporate directors, who set Fidelity Investments' policy and direction at the highest level. Technically, Simmons is a peer of the other operating companies' presidents but, in actuality, he moves and operates at a higher level than all but the few others who sit on the committee with him.

Only within the last two years has the five-man committee structure evolved.

Previously, the committee was made up of a larger group that has been trimmed to make the committee more efficient. Simmons, however, always

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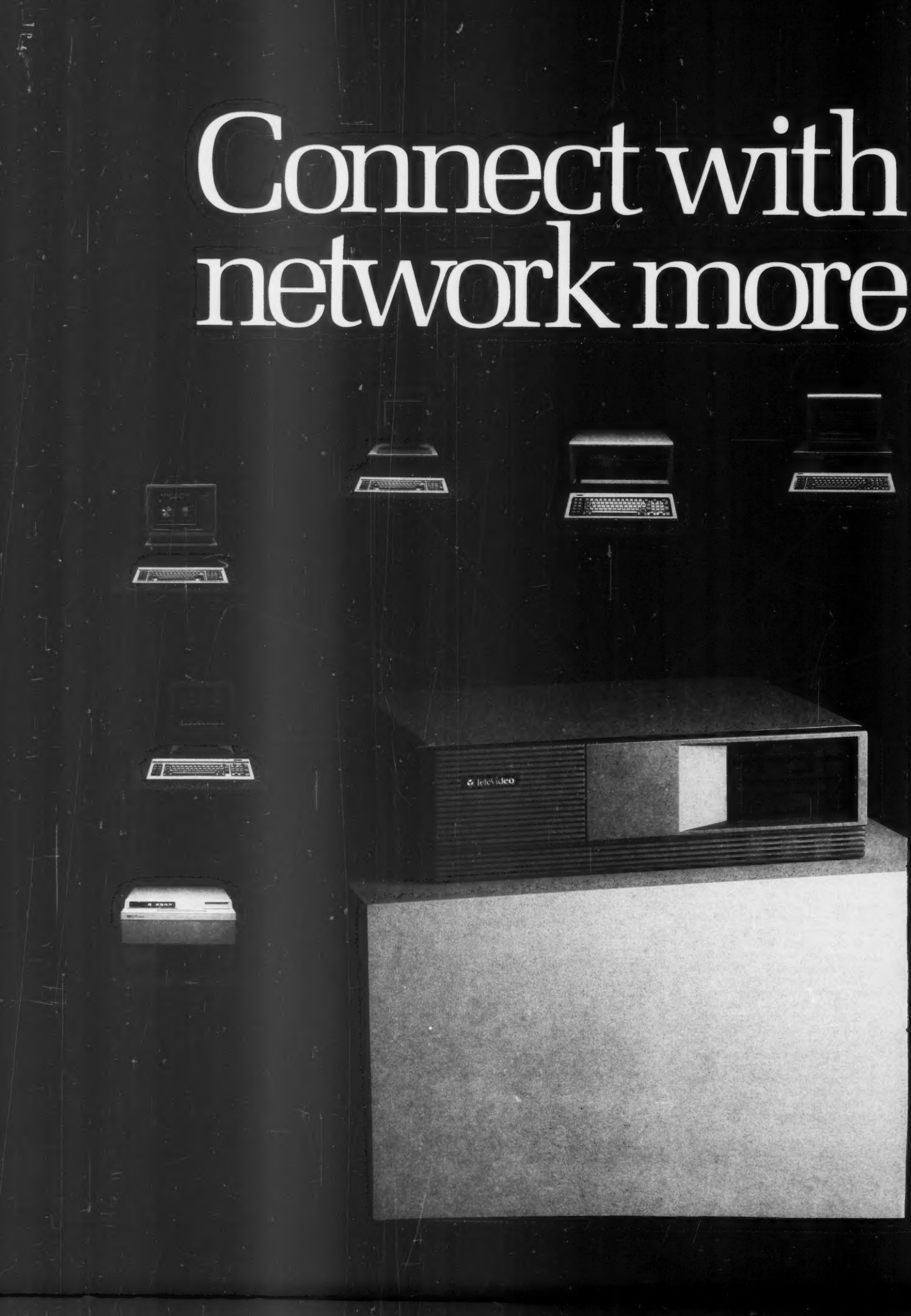

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reported to the chairman. It is unusual that systems personnel would be placed this high in a corporation, but, Johnson claims, "we put so much emphasis on the computers and technology, while other companies give systems a lot of lip service."

At Mellon Bank, the computer systems department is organized as a department that reports to members of the corporate board. Heading the computing function is an executive vice-president of information management and research, who reports directly to the vice-chairman, DiNardo.

Five-to-one rule

DiNardo is a strong believer in the classic five-to-one reporting rule, and the computer systems department is structured along this line. The structure has been in place for 18 years, DiNardo notes, and he sees no evidence of a need for change.

Reporting to the executive vice-president at the top of the department are four vice-presidents, who are group heads, and one other employee, at a lower level, in charge of data security and administration. The groups include information systems and programming, information processing, regional information director and communications and maintenance.

Reporting to the group heads are division heads. For instance, within the communications and maintenance group are two division heads: one for maintenance and one for communications. Below the division heads, the department is structured along conventional function-based roles.

As vice-chairman, DiNardo says he does not find that his computer background or his "mechanic" attitude prevent him from operating on an equal footing with other, more conventional corporate officers. Nor does he find anything new or unusual in computer systems managers' being called upon to participate in strategic planning.

"I don't know what's so magic about strategic planning," he says, although, he notes, some computer systems managers apparently consider participation in strategic planning the membership card that proves they have finally entered mainstream top management.

From a strategic-planning standpoint, DiNardo finds it natural, especially for a financial organization, to include the computer systems manager in all decisions. "We are the production department," he contends. "It's important that we have a strategic plan and that we know the plan of every other department in the bank."

Accountable divisions

In 1984, Carter Hawley Hale Stores, Inc., an Anaheim, Calif.-based retailing conglomerate, established its Information Services division as a separate entity as part of an overall strategy to establish accountable service divisions throughout the company, according to Robert Menar, president and chief operating officer of Information Services.

Marketing Services, which is based in New York, is another such independent division of Carter Hawley Hale.

The Information Services

Continued on page 82

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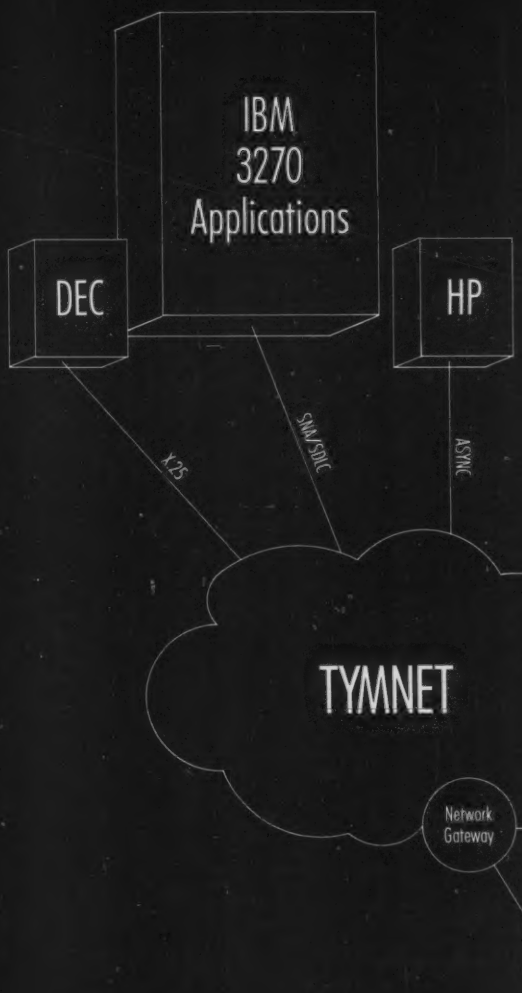

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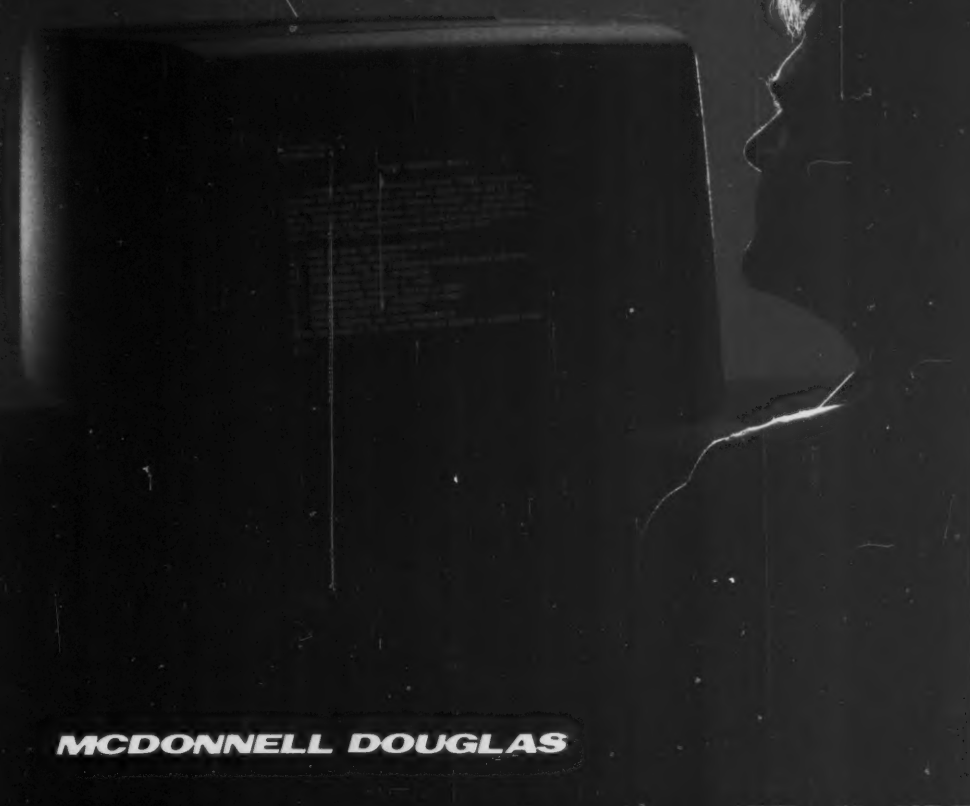

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MCDONNELL DOUGLAS

The chairman's viewpoint

BY WILLIAM ANDERSON

Touche Ross held a meeting in Dallas in October 1986 that focused on the roles and responsibilities of chief information officers (CIO). George L. Ball, chairman and chief executive officer of Prudential-Bache Securities, Inc., gave the keynote address.

Ball's speech was more than well received by the group, since it provided a CEO's concise view of the attendees' jobs and a background for further discussion in the following days.

Ball's first point was, "Give us less." Currently, he receives roughly 250 reports a month. He and other chief executives express a real need for the CIO to filter the data and deliver to them only information that requires their particular attention.

Second, Ball requested that information systems departments stay on the "reliability edge" rather than striving for the "cutting edge." He held up this restraint as particularly important in the financial services business in spite of the fact that Prudential-Bache pushes the cutting edge of innovation in its branch office network as well as in its trading systems.

Third, Ball said, "make it global and adaptable." This means we can no longer be satisfied running different systems in different parts of the world. He wanted CIOs to employ similar services with strategic solutions to hardware, software and application functions and provide solutions that are adaptable to changes required within a given location.

Fourth, Ball said he expects the CIO to "leverage winners." By knowing how the best account executives (Prudential-Bache's term for brokers) use the branch office network and how the best traders use the new trading systems, information managers should leverage the knowledge and share the results with all users. Simply put, let the system assist the new user in becoming optimally productive.

Fifth, Ball insisted on the CIO's role as a "proactive business leader," capable of jarring the organization out of its accustomed path.

Finally, Ball recommended that the CIO establish a "new partnership" with the management team — creating, interpreting and judging the value of all information processed.

The goals I subsequently established for Prudential-Bache's information systems department include the following:

- Hire and hold the brightest people.
- Migrate from tactical to strategic solutions — especially global ones.
- Never go down. Raise system availability from 99.3% to 99.9% through better designs and by seeking large fault-tolerant system solutions.
- Become the business innovator and judge of information's value to the organization.
- Accelerate the entire process. Strive to cut three hours out of the nightly processing stream to meet London's opening.

With the leadership of the president of the firm's administrative group and the teamwork of the executive committee, coupled with the unparalleled commitment of George Ball to a new level of automation, I believe we can achieve these goals.

Anderson is senior vice-president and director of the Information Systems Division of Prudential-Bache Securities, Inc. in New York.

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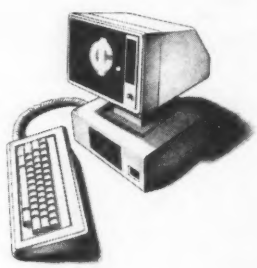

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CONTINUED FROM PAGE 80

division operates like other divisions in the company and is structured along the lines of a profit center. "We charge out everything we spend, and we bill [the other divisions] in units of consumption for what they use," Menar says.

Carter Hawley Hale is constructed to keep as few levels as possible between top and lower management; during the restructuring, an entire level of management was eliminated. The drive to reduce management levels is perpetrated throughout the company, although Information Services maintains its own structure and uses different titles, Menar says.

Menar and the CEO report to an executive vice-president, who is a member of the management committee. Generally, the CEO of a Carter Hawley Hale division would report to the president of the corporation, but Information Services "was godfathered through by the management committee," Menar explains. On that committee is an employee with a background in systems, "so it was logical that we report to that person," he adds.

Reporting to Menar are vice-presidents of applications, communications, end-user computing, corporate data and software services. Also reporting to him is the head of security, which is a staff function. Below the vice-presidents are senior managers and project managers. Like many other systems operations with evolving consultant roles, Menar is developing a customer service group at Information Services.

As chief operating officer, Menar is responsible for taking care of the division's day-to-day operations. He reports to the CEO and chairman, who takes on the responsibility for strategic planning. Strategic planning is given special importance at Carter Hawley Hale, which Menar describes as "the only centralized major retailer in the country." Because of its centralized approach, strategic planning is required of every division.

The consulting firm model

Ironically, just as MIS departments achieve parity in structure and titles with major operating segments of the organization and as MIS personnel penetrate the highest levels of top management, MIS departments are evolving away from the traditional corporate model into something closer to a consulting firm model, according to Index Systems' Davenport.

The integration of computers into every aspect of corporate life is forcing MIS departments to break from their centralized, self-contained structures to serve computing needs at every level of the organization. "There's a real shift to thinking of the other departments as customers of information systems and assigning systems people to those departments, almost like a consulting firm would," Davenport says.

The Hartford, a major insurance company, recently experienced a restructuring that brought the company's insurance functions more in line with its product groups. As a result, the systems department restructured to fit the new overall alignment.

The most dramatic change concerns the way the computer function operates with other business departments. Much like the consultant model Davenport introduced, The Hartford organized a customer-automation support service organization to be the single point of contact for all customer support, according to Jack Crawford, recently appointed director of information management. "What used to be the systems department is now customer-automation support," he says.

> "WE ARE totally dependent upon automation. It's our factory."
>
> JACK CRAWFORD
> THE HARTFORD

Crawford holds the highest position in the Information Management division. He is responsible for applications systems, technical support, equipment, communications and administration. Previously director of data processing, Crawford now reports to Bill Harrison, a vice-president at The Hartford Insurance Group and director of operations, processing and planning; Harrison previously held Crawford's position.

Harrison reports to the vice-president of operations, who possesses an even higher level of corporate management with broad general management responsibilities in addition to computer systems, although, Crawford notes, the current vice-president for operations comes from an information management background. The vice-president of operations reports directly to the president.

Until five years ago, computer systems personnel reported to a manager in the financial area. As computer systems grew in importance and served non-financial-management needs, responsibility for the department was moved from the financial management department to a corporate vice-president, affording the information systems

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department a direct line to top management and putting it on par with other departments such as administration and finance, its previous overseer.

Six people, also holding director titles but performing more specific functions, report to Crawford as director of information management. Reporting to the various directors are 11 department heads and some group managers. Another management layer, and sometimes two, exists below department heads, but top management in the 2,300-employee department stops at the department-head level.

As director of information management, Crawford, the top line manager, is responsible for daily operations of the department. He supports Harrison, who is charged with corporate planning and strategic management responsibility. "We haven't anything like a CIO," Crawford says, "but if we did, it would probably be some kind of combination of my responsibilities and Harrison's."

Crawford says he believes the changes in the past five years reflect the growing importance of the computer system in the life of the corporation. "We are totally dependent upon automation. It's our factory."

Larger corporate roles

Conversations with MIS management throughout the country confirm that systems departments are expanding and that they are assuming larger corporate roles. As that expansion occurs, system managers are becoming more involved in general corporate management and strategic planning rather than just the tactical management of day-to-day computer operations.

Computer systems departments are increasingly being spun off as independent service companies or divisions, removing the systems department from direct responsibility to some other department — in most cases, finance and administration.

At the same time, one trend is to follow the decentralization of computing by placing applications and support personnel directly into other departments or divisions served by the system. There, they would act as computer consultants and representatives of the systems company that was created.

In the end, no matter how the computer operation is structured, the companies that benefit the most from systems will be those that call upon computing systems managers for business solutions, not just for systems operations. Regardless of the titles they assume, the computing managers who can apply their expertise with the systems to solve the organization's problems and capitalize on market opportunities will succeed.

These managers, however, pay a price for the growing importance of computer systems and for their own new stature. They must also shoulder more responsibility and accountability because they wield a growing influence on the organization's ultimate success or failure. It will be some time before titles and corporate structures uniformly reflect all these changes. •

Chief financial officers seek to keep MIS on the same rung

BY GLENN RIFKIN

In an informal survey of chief financial officers, it was clear they considered MIS to be of paramount importance to their businesses and at the same time felt it was neither necessary nor wise to have MIS report directly to the top to gain a competitive advantage.

"I can't imagine a CEO finding it necessary to have such a reporting structure," says Gary Wilson, chief financial officer of Walt Disney Co. in Los Angeles.

"We're comfortable with the way MIS is operating, and it is not a hindrance to have it report to me," agrees Gary Michael, chief financial officer at Albertson's, Inc., a Boise, Idaho-based chain of supermarkets. "We don't consider it a back-room operation, and the MIS chief is part of the management team. The management team as a group sets priorities for what MIS is going to do. What is important is the attitude you take; the reporting structure is secondary," Michael contends.

Nonetheless, leading information-based corporations such as Security Pacific Corp., American Airlines, Citicorp and others have elevated the status and stature of their MIS operations. The notion that the MIS chief must sit at the planning table with credentials equal to those of the company's other top officers in order to truly portray the impact of information systems is gaining credence.

'We were always comfortable'

Michael disagrees. "MIS has reported to different areas at different times here, and it really didn't matter. We were always comfortable they would get the job done," he says. "It would be harder for them if they were independent and had to sell their services. This way they can concentrate on getting the job done."

One chief financial officer from a large midwestern corporation insists that MIS must go to work on priorities set by top management. "In planning sessions, we want them at the table helping make decisions, but you don't want the DP jock running the company. You don't want the finance guy running the company either," he says.

Some chief financial officers are surprised at the thought that, by reporting to them, MIS loses credibility. "We don't think of MIS as a back-room function," Wilson says. "The controller and treasurer report to me also, and we don't see them as back-room either."

"Companies differ in their attitudes toward the need for information," says Richard Radey, chief financial officer at Agway Corp., a $3.5 billion conglomerate with businesses in such diverse areas as insurance and agriculture.

In Radey's view, the value and prestige of MIS varies according to the business of the corporation. Firms with high reliance on information and data, such as insurance companies or banks, are apt to view MIS differently. "In the insurance business, you conduct business through the computer, but you don't sell fertilizer that way," he says.

Radey admits that the idea of instituting a chief information officer position has come up at Agway, but, he says, it has not yet been formally proposed. "The CEO has more people reporting to him than he needs right now, so a chief information officer wouldn't be a good idea. He wouldn't get the attention he needs," Radey states.

While that idea germinates, the brunt of responsibility continues to fall on the chief financial officer. "A lot depends on how strong the chief financial officer is within the organization and what his attitudes are toward MIS," Radey says.

And, chief financial officers agree, the function has become so visible and pervasive that the importance of MIS overshadows the reporting structure. "They report to me, but they are not my private domain," Michael says. "It really comes down to the fact that everybody has to report to somebody." •

Rifkin is a Senior Editor at *Computerworld*.

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MANAGEMENT

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Getting execs up to speed

Executives cannot make good decisions on things they don't understand or don't feel comfortable with. Most executives neither understand nor feel comfortable with the computer — more broadly, information technology.

Consequently, most executive decision making on information technology leads to disappointing results.

Executive decision making is required to order technology, to direct it and to dramatically change organizational structures to harvest the benefits from the technology.

Yet after five years or more of investing in high-potential information technology in the office, the factory and distribution, companies are hitting a stone wall that has been built up by a generally low level of executive awareness.

Executive stonewalling isn't going to change until companies attack the root of the problem. Executives have to come up to speed on information technology to the point where including it in business strategies is not only a comfortable process but also a routine one. We have

Continued on page 91

MIS, managers told to pair up

BY AMY SOMMERFELD FIORE
CW STAFF

NEW ORLEANS — "The idea for a strategic system has to come from the gut of line managers," MIT's Michael Treacy told more than 600 executives gathered at a conference here.

The theme of the meeting — "The Inevitable Partnership" — stressed the cooperative efforts of MIS, top management and end users that make strategic systems possible.

The conference pulled together managers from insurance and financial planning firms, all members of the Life Office Management Association (LOMA), a national organization for life insurance firms and related companies that is based in Atlanta.

Treacy, an assistant professor of Management Science at MIT's Sloan School of Management, set the tone of the conference in his keynote address.

"We're good at building systems right, but we don't build the right systems. Eighty percent of our resources are still going into back-office applications. But is a single company better competitively because they have a better accounting system? No!

"Successful systems are systems that are driven to work" by line managers who are committed heart and soul to making them work, Treacy said. The ideal partnership pairs those who can manage business risk with those who can manage technological risk, he explained.

Michel Newman-Desjardins, group systems manager for Imperial Life Assurance Co. of Canada, agreed.

"In my division, the users are heavily into developing strategic systems themselves. We're in the process of transposing our whole corporate data base into IBM's DB2/AS" so users can write their own applications, he said. "All MIS does is maintain it," he added.

Another of Treacy's keynote remarks provoked much debate and was referenced by many other speakers. "If you're not going after a big change, it's not worth it," Treacy proclaimed, calling major strategic systems "home runs" and citing American Airlines' Sabre reservation system as one example.

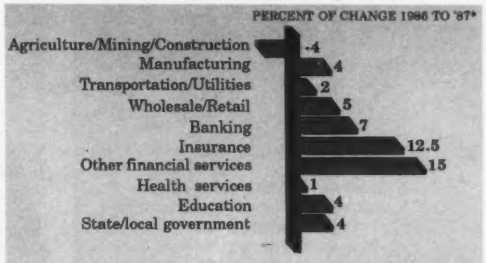
Malcolm MacKinnon, senior vice-president of The Prudential Insurance Co. of America, dis-

Continued on page 87

Data View

Systems spending

1987 growth in information systems spending



*Industry growth percentages reflect adjustments to survey-derived data based on other International Data Corp. and Department of Commerce data

INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART: SUSAN ALDAM

Turnover ups grads' pay

BY DAVID A. LUDLUM
CW STAFF

Spurred by near-record turnover, average annual salaries for computer science graduates entering the data processing field this spring will rise $1,500 from last year's level to $27,000, a recent survey reports.

The 6% increase in starting salaries is because of continuing competition for DP personnel, according to Edward Perlin Associates, Inc. in New York,

Continued on page 90

Harvard says MBAs need MIS

BY DAVID A. LUDLUM
CW STAFF

As of this spring, the things they don't teach you at Harvard Business School no longer include management information systems.

Actually, the business school launched its first course dedicated to data processing in 1962 and through last year included five sessions on MIS in a required course on control.

But now, first-year students, who pursue a program made up entirely of required courses, face the school's first required course devoted to information systems.

Harvard Business School aims to turn out future top managers, and this uncommon change in its first-year program reflects the growing importance of information systems to companies and thus to general managers.

"For a school that has a heavy strategic focus, we just believe it's something that you have to have in the tool kit of a future general manager," says Prof. James I. Cash Jr., who is in charge of the course.

Continued on page 90

Inside

• New feature: Monthly calendar of local meetings and events. Page 87.

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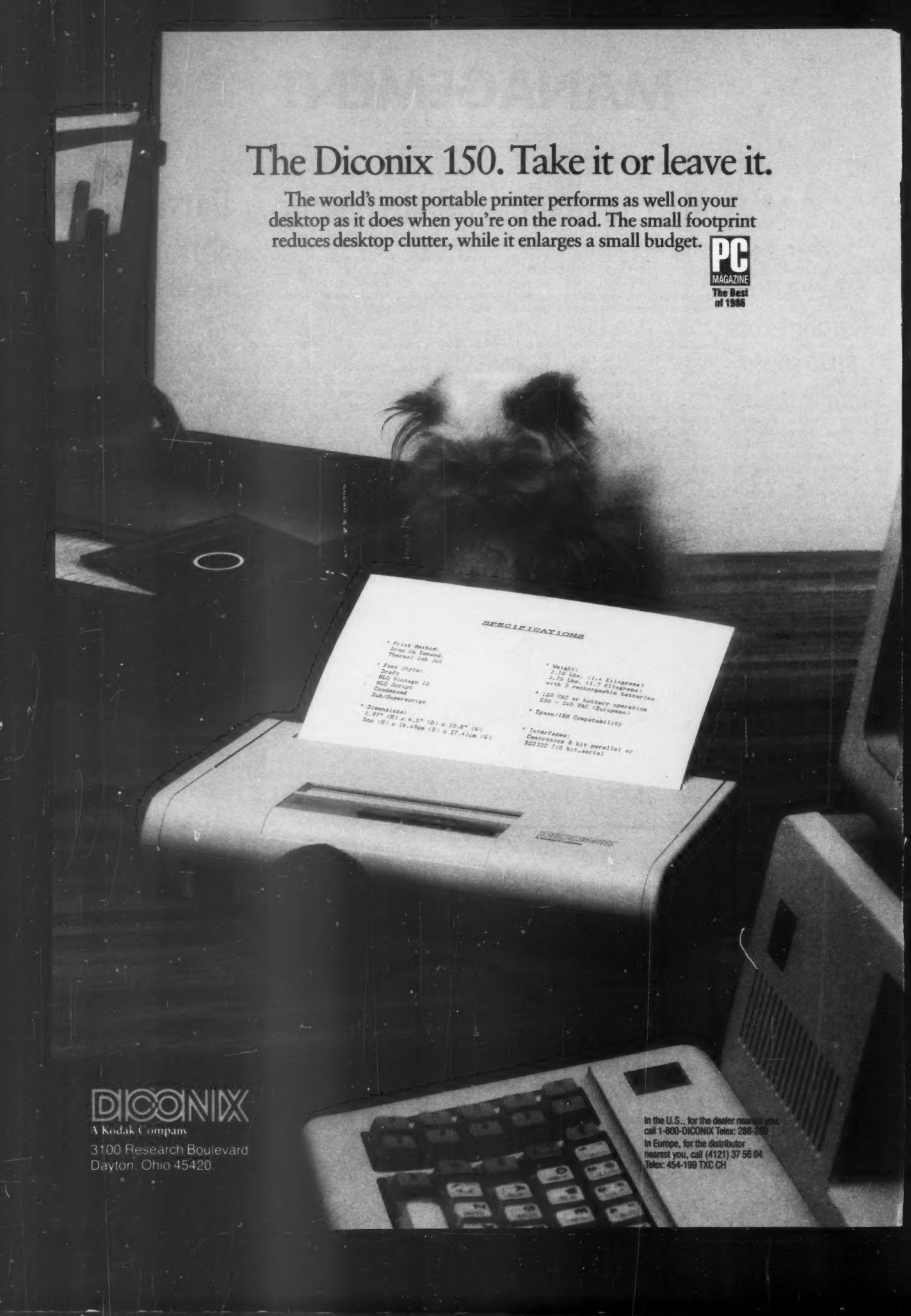
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LOCAL HAPPENINGS

APRIL

Communication Networks at Wang: A Case Study. Boston. April 14, 3-5 p.m. — Contact: EDP Auditors Association, Inc., P.O. Box 516, Boston, Mass. 02102.

Auditing with Micro Computers. Boston. April 14, 7-8 p.m. — Contact: EDP Auditors Association, Inc., P.O. Box 516, Boston, Mass. 02102.

Focus/Systems Meeting (IBM System/34, 36 and 38 Users Group). **Norwalk, Calif.** April 14, 6 p.m. — Contact: IBM Norwalk Branch Office, 12501 E. Imperial Highway, Norwalk, Calif. 90650.

The Strategic Use of Executive Information Systems. Boston. April 16, 11:30 a.m. — Contact: Society for Management of Professional Computing, 715 Boylston St., Boston, Mass. 02116.

CICS Macro Applications. Chicago. April 17, 6-9 p.m. — Contact: Black Data Processing Associates, Chicago Chapter, P.O. Box 16548, Chicago, Ill. 60616.

Practical Disaster Recovery Planning. Marlboro, Mass. April 27 — Contact: Mike Muraca, Boston User Group, c/o Boston Water and Sewer Commission, 10 Post Office Sq., Boston, Mass. 02109.

Delaware Valley DB2-SQL/DS Users' Group Meeting. Philadelphia. April 28 — Contact: Delaware Valley DB2-SQL/DS Users' Group, Suite 505, 3650 Silverside Road, Wilmington, Del. 19810.

Guidance International Meeting (IBM System/34, 36 and 38 Users Group). **New York.** April 28 — Contact: Guidance International, Inc., P.O. Box 132, Lenox Hill Station, New York, N.Y. 10021.

MAY

How to Work a Room. San Francisco. May 6, 5 p.m. — Contact: Association for Women in Computing, Suite 1044, 41 Sutter St., San Francisco, Calif. 94104.

Focus/Systems Meeting . Norwalk, Calif. May 12, 6 p.m. — Contact: Fred Morisaki, IBM Norwalk Branch Office, 12501 E. Imperial Highway, Norwalk, Calif. 90650.

TABES '87: Technology and Business — Succeeding in a Global Economy. Huntsville, Ala. May 12-13 — Contact: Chamber of Commerce, P.O. Box 408, 225 Church St. NW, Huntsville, Ala. 35804.

MIS, managers

CONTINUED FROM PAGE 85

agreed. "Trying to hit a home run every time means you strike out a lot — just ask Reggie Jackson," MacKinnon said. He pointed out that Pete Rose tallied his 4,000th hit mostly on "valuable" singles.

But Alan Bignall, vice-president for corporate systems at IDS Financial Services, Inc., sided with Treacy. "I don't think you should aim for singles. Everybody can aim for singles," he said.

Bignall was partly responsible for a major strategic system when, in 1985, IDS began providing its clients with consolidated statements.

Treacy pointed out that American Hospital Supply Corp.'s famous on-line link to customers — one of the best-known examples of strategic use of information systems — was never intended to be a "home run."

Hardly a strategic gain

According to Treacy, MIS management at Evanston, Ill.-based American Hospital Supply originally resisted the idea of giving customers direct access to order entry. They agreed to it when top management forced the issue. Even then, Treacy said, justification for the system rested on MIS's prediction that the system would replace some of the 200 keypunch operators required to input the paper orders — hardly a strategic gain.

Joseph T. Brophy, senior vice-president at The Travelers Corp., described the development of a 6,000-rule expert system for devising individuals' financial plans, and Prudential's MacKinnon presented a step-by-step scenario whereby an agent proposed, sold, got approval for and delivered a million-dollar life insurance policy to a wealthy client on demand in one day through some very high-tech communications.

But how realistic is it for a small or mid-size company to shoot for these "home runs"?

"We want to be at the leading edge, not the cutting edge," said Marvin Hanigan, executive vice-president of Gulf Life Insurance Co. in Jacksonville, Fla. "Let the Prudentials do that. They've got the money to throw away."

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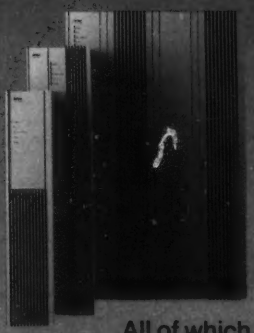

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Harvard MBAs

CONTINUED FROM PAGE 85

Rather than emphasizing hands-on management of information systems as courses on the subject traditionally have, the new program stresses how information technology affects organizations, according to Professor Warren McFarlan, who helps teach the course and worked as a research assistant with the school's first DP class in 1962.

McFarlan describes the 20-session course as fostering "a framework to think about how [information technology] is really transforming industry structures, firms' product lines, channels of distribution, organization structures and control processes." The classes, aimed at underlining the importance of information technology, have examined its impact on the airline industry and the organization of a chemical company.

The latter case focuses on issues such as how computers can affect the number of subordinates that report to one manager, Cash says.

Subsequent sessions will deal with analyzing the potential for strategic uses of information systems in a business, implementing information technology and emerging and potential applications of the technology.

The last time a course was added to the business school's required first-year curriculum was five years ago, when a human resource management class was added.

Turnover

CONTINUED FROM PAGE 85

which projects the change on the basis of preliminary findings from its ninth annual survey of DP positions.

"It is clear that companies are taking aggressive steps to cope with staff turnover, which, in some of our client companies, is at near-record levels," says Peter Tamblyn, a consultant with Perlin, which consults on compensation management.

The average rate of turnover of programmers and analysts seems to be at least equal to last year's 16% to 18%, which was down from a peak of about 19% to 20% in 1985, says Roger O'Connor, a Perlin spokesman.

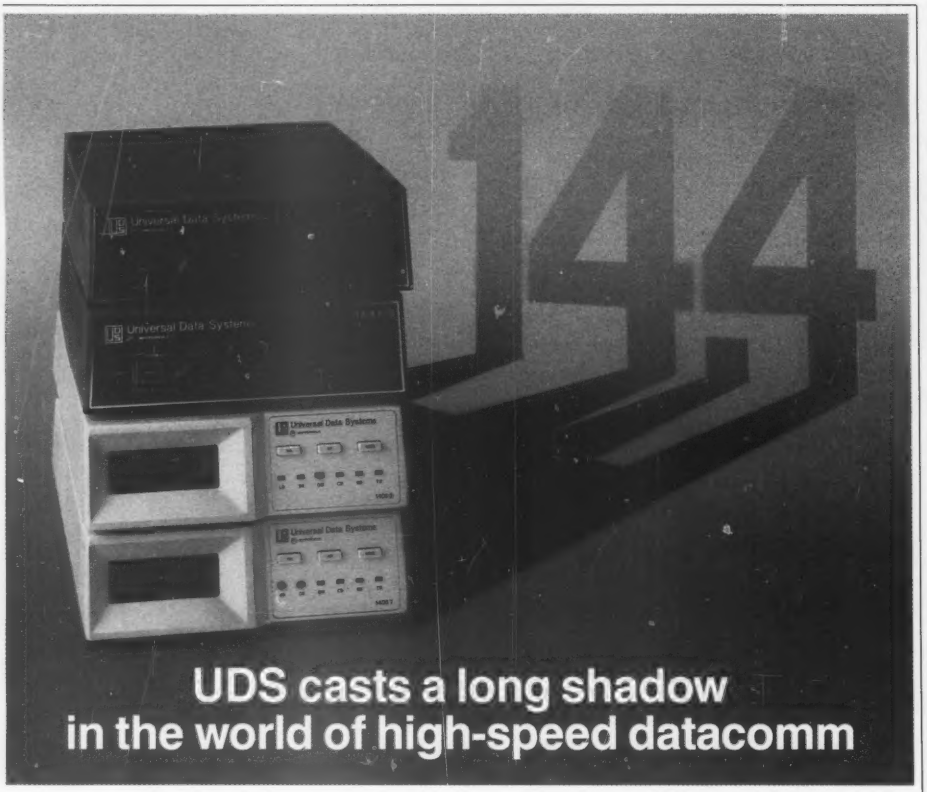
Preliminary survey results also indicate that companies are placing greater emphasis on in-house training and accelerated-merit programs, the firm says.

Accelerated salaries

In an accelerated-merit program, entry-level employees start at below-market salaries but receive accelerated raises to bring them up to competitive pay levels, according to Perlin.

The expansion of in-house training reverses a trend of reduction of the programs in recent years to cut costs while hiring more experienced employees, according to the firm.

"Now, companies are finding the experienced people are very hard to recruit and retain," Tamblyn concludes.



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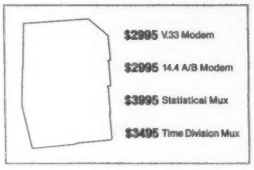

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CALENDAR

APRIL 19-25

The National Information Management Users Conference. Dallas, April 21-22 — Contact: Eastern regions: Jan O. Ward, Quality Information Consultants, Inc., 11204 Angus Place, Potomac, Md. 20854. Western regions: Ann K. Anderson & Associates, P.O. Box 4157, Foster City, Calif. 94404.

DEC Review: The Digital Challenge. Cambridge, Mass., April 21-22 — Contact: Diane Szretter, International Data Corp., 5 Speen St., Framingham, Mass. 01701.

Standards: The Ties That Bind. New York, April 22-23 — Contact: The Yankee Group, 200 Portland St., Boston, Mass. 02114.

The Artificial Intelligence and Advanced Computer Technology Conference and Exhibition. Long Beach, Calif., April 22-24 — Contact: Tower Conference Management Co., 331 W. Wesley St., Wheaton, Ill. 60187.

APRIL 26-MAY 2

Tandy Computer Business Users Group Fifth Annual Conference. Fort Worth, Texas, April 26-29 — Contact: Tandy Corp., 1800 One Tandy Center, Fort Worth, Texas 76102.

1987 Association for Systems Management Annual Conference. Louisville, Ky., April 26-29 — Contact: Richard B. McCaffrey, ASM, 24587 Bagley Road, Cleveland, Ohio 44138.

National Workshop & Computer Systems Demonstrations. Kansas City, Mo., April 26-29 — Contact: Management Systems Committee, American Trucking Associations, 2200 Mill Road, Alexandria, Va. 22314.

Software Licensing Agreements: Structure, Content, Law. Boston, April 27 — Contact: Douglas Grube, Data Tech Institute, P.O. Box 2429, Lakeview Plaza, Clifton, N.J. 07015.

Expo Bank Asia 87 Conference. Osaka, Japan, April 27-28 — Contact: Expo Bank Asia 87 Conference, E. J. Krause & Associates, Inc., Japan, 11-14 Akasaka 3-

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Getting execs

CONTINUED FROM PAGE 85

found no painless quick fix here. Since a company's senior management group as a whole is involved, nothing short of an executive-awareness campaign launched by the very top will succeed. Anything short of such a campaign peters out in less than a year. The process of gaining executive awareness is not without pain, and the senior management group holds enough power to dodge lesser attempts.

Through our own sometimes painful experiences developing and teaching executives awareness at the Harvard Business School, UCLA, Oxford, IBM and at Nolan, Norton and Co., we have evolved a formula. It consists of prerequisite organizational conditions, hands-on training, executive education, internal workshops and a continuing program of information technology currency.

First, the prerequisite organizational structure must be in place. Realizing the strategic potential of information technology requires the ability to mobilize from the top. Some form of computer-functional executive and executive steering committee are integral to top-down mobilization efforts. The computer-functional executive holds overall corporate responsibility for providing leadership on the employment of information technology to most effectively realize the company's business strategy.

Key skills for this person include organization design (including the balance of centralization and decentralization), management control, human resource management and architecture design and implementation. The architecture design and implementation skill is critical because it is the communication medium between executives and information technology professionals.

Three-phase campaign

A three-phase campaign can be instrumental in realizing the level of executive awareness necessary for strategic information decision making.

Phase I is a remedial experiential program involving valuable executive time, including periods of some frustration — as primary learning always does. No matter how often we attempt to rationalize the proposition that executives really don't need to know how to use technology, a contrary truth remains: Executives who have hands-on experience with PCs and electronic or phone mail become more comfortable making decisions about information technology than those who lack such experience.

Facing up to the remedial education experience is a bit like having to take bonehead English at a university. It is a rather demeaning experience but one that you have to bear in order to achieve a higher level of education. We should quit coddling executives and take the time to give them hands-on experience.

Phase II of the executive-awareness process focuses on the following objectives:

- Gaining the commitment of the chief executive officer to an active program that builds awareness among corporate management of information technology.
- Establishing an "Information Technology Awareness Program" for corporate management with an emphasis on the role managers should play in guiding and monitoring information technology activities within the corporation.
- Developing direction for delivering information technology-awareness programs in the divisions.

Phases I and II can break the wall that hinders setting directions for information technology. Once the wall is penetrated, however, an ongoing effort is required to ensure that growth continues.

Phase III is continuing executive education, which reinforces the lessons learned and enhances levels of awareness. Professional management should devote at least 12 days a year to the Phase III effort; more if information technology has already become a critical means of delivering your organization's products and services.

A successful executive-awareness program cannot be treated as a one-time event nor should it be isolated from larger business concerns. Three guidelines help to preserve a broader context.

Orchestrate the growth

First, keep it in the context of a larger program or effort; after defining the gap in management awareness, the next step is to define the objective of the program in light of current corporate objectives. Second, define a framework to keep the information technology issues in perspective. And third, recognize that the management-awareness program is a process and a campaign, not a set of discrete events. Successful organizations orchestrate the growth in awareness consistently through a variety of channels rather than through a series of discrete, flashy events.

In conclusion, the computer has moved out from the narrow DP field to serve the robust, organizationally pervasive information technology infrastructure. With this shift in emphasis, investments have risen to the point where information technology is now a major cost component of almost all products and services. If these investments are not managed well, a company finds itself at a cost disadvantage and, ultimately, at a competitive disadvantage.

Nolan is co-founder and chairman of Nolan, Norton and Co., a Lexington, Mass., subsidiary of Peat, Marwick, Mitchell & Co. Mantz is a manager with the firm's Education Practice.

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1987 Association for Information and Image Management Show. New York, April 27-30 — AIIM, Suite 1100, 1100 Wayne Ave., Silver Spring, Md. 20910.

Speech Tech '87. New York, April 28-30 — Contact: Margo Kelly, Media Dimensions, Inc., 42 E. 23rd St., New York, N.Y. 10010.

Corpcon. Chicago, April 28-30 — Contact: Linda Morris, Corpcon, P.O. Box 3727, Santa Monica, Calif. 90403. Also being held Sept. 21-23 in Los Angeles.

Dexpo South '87. Nashville, April 28-30 — Contact: Expoconsul International, Inc., 3 Independence Way, Princeton, N.J. 08540.

BMC Software User Group's Second Annual Meeting. Houston, April 29-May 1 — Contact: Marianne Levandoski, AT&T, Room 50-51A40, 30 Knightsbridge Road, Piscataway, N.J. 08854.

IBX Users Group Association 12th Meeting. Irvine, Calif., April 29-May 1 — Contact: Elizabeth Stockwell, Wang Laboratories, Inc., Mail Stop 013-038, One Industrial Ave., Lowell, Mass. 01851.

19th Annual International Management Information Systems Conference. Cambridge, Mass., April 29-May 1 — Contact: Paper Industry Management Association, 2400 E. Oakton St., Arlington Heights, Ill. 60005.

MAY 3-9

AUUA (Sperry Users) Spring Conference. Orlando, Fla., May 3-7 — Contact: Randal L. Leonard, Gay & Taylor, Inc., P.O. Box 1410, Winston-Salem, N.C. 27102.

BLIS/COBOL Users Group Annual Meeting. Orlando, Fla., May 3-7 — Contact: BLIS/COBOL Users Group, Suite 110, 222 S. Westmonte Drive, Altamonte Springs, Fla. 32715.

Eighth Annual Meeting of the International Association of Synercom Users. Houston, May 3-7 — Contact: Gary Carson, Synercom, 10405 Corporate Drive, Sugar Land, Texas 77478.

Second International Conference on Supercomputing and First World Supercomputer Exhibition. Santa Clara, Calif., May 3-8 — Contact: Lana Kartashev, Dynamic Computer Architecture, Inc., Suite B-309, 3000 34th St. S., St. Petersburg, Fla. 33711.

Computers & Communications in the Healthcare Industry. Dallas, May 4-5 — Contact: Carol Every, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

Eastern Communications Forum 87. Stamford, Conn., May 4-6 — Contact: ECF, 505 N. Lake Shore Drive, Chicago, Ill. 60611.

BankAI. Brussels, May 5-6 — Contact: Society for Worldwide Interbank Financial Telecommunications, AI Business Unit, Avenue E. Solvay 81, 1310 La Hulpe, Belgium.

Eighth National Online Meeting. New York, May 5-7 — Contact: Learned Information, Inc., 143 Old Marlton Pike, Medford, N.J. 08055.

18th Annual Meeting of the ASI Users' Group. New Orleans, May 5-8 — Contact: University of Michigan, Data Systems Center, 2021 Administrative Services Building, Ann Arbor, Mich. 48109.

Second International Optical Storage Forum. Denver, May 6-8 — Contact: Cartlidge & Associates, Inc., Suite M259, 1101 S. Winchester Blvd., San Jose, Calif. 95128.

1987 International Conference & Exhibition on Health Industry Bar Coding. Atlanta, May 6-8 — Contact: Automatic Identification Manufacturers, Inc., 1326 Freeport Road, Pittsburgh, Pa. 15238.

MAY 10-16

APL87. Dallas, May 10-14 — Contact: APL87 Registrar, Suite 210, 440 Northlake Shopping Center, Dallas, Texas 75238.

VIP '87 — Duquesne Systems International Users Group. Chicago, May 11-12 — Contact: Donna Bartko, Duquesne Systems, Inc., Two Allegheny Center, Pittsburgh, Pa. 15212.

Audit Managers' Symposium IX. Hilton Head Island, S.C., May 11-13 — Contact: Jane Evans, MIS Training Institute, 4 Brewster Road, Framingham, Mass. 01701.

CD-I/The Future Conference. San Francisco, May 11-13 — Contact: Carol Peters, Online International, Inc., 989 Avenue of the Americas, New York, N.Y. 10018.

Intercompany Networks: Strategy and Implementation. New York, May 12-13 — Contact: William Smulsky, The Yankee Group, 200 Portland St., Boston, Mass. 02114.

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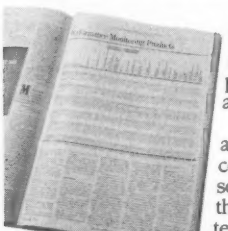

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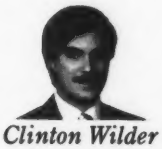


Clinton Wilder

Amiga dons business suit

Will Thomas Rattigan become the second former Pepsico, Inc. executive to turn a well-known maker of proprietary-architecture home computers into a successful vendor of business microcomputers?

That is the challenge facing Commodore International Ltd., whose low-cost home computers fueled one of the industry's most spectacular rise-and-fall stories. Commodore President and Chief Executive Officer Rattigan, who knew but did not work with Apple Computer, Inc.'s John Sculley at Pepsi, has already met one challenge: steering Commodore back into the black from losses that ran as high as $53.2 million in the fourth quarter of 1985.

Rattigan's astute cost cutting and navigation of the saturated home market have been no mean feats. But at this late starting date, establishing inroads in the crowded, fiercely competitive U.S. corporate micro market is an even tougher order than restoring a company's profitability. "Our No. 1 problem," Rattigan says, "is one of perceptions."

West Chester, Pa.-based Commodore is staking its business-market claim with the new Amiga 2000, unveiled with much fanfare in the U.S. at the Boston Computer Society's March meeting. Many may remember the much splashier 1985 introduction of the Amiga 1000 — a multimedia extravaganza featuring rock star Deborah Harry and the late artist Andy Warhol at New York's Lincoln Center. But the 2000 contains a critical difference: a slot for the Amiga Bridge Board, which will allow the graphics-rich Amiga to run Microsoft Corp.'s MS-DOS.

That's a first for Commodore and, the company believes, the necessary ticket for admission to the business micro world. The $600 Amiga Bridge Board is only IBM Personal Computer XT compatible at this point, but

Continued on page 95

Stern Bullish on systems focus

BY STANLEY GIBSON
CW STAFF

BOSTON — Following a tumultuous 1986 for Honeywell, Inc. users, the newly formed Honeywell Bull, Inc. promises to bring those customers calm and stability, according to the firm's chairman, Jacques Stern.

"It was very difficult for Honeywell to build up credibility in computers when they were in other businesses as well. The perception was that they were not just a computer company," Stern said in a recent interview. He is chairman and chief executive officer of Paris-based Compagnie des Machines Bull, as well

Jacques Stern

as chairman of Honeywell Bull. Honeywell recently gave up 57.5% ownership of its Information Systems unit to Bull and Japan's NEC Corp.

Honeywell's attention to its noncomputer businesses was the cause of its Information Systems division's lackluster performance in recent years, Stern maintained, adding that last year's layoff of some 4,000 employees and the corporate jockeying that preceded the spin-off helped to create uncertainty among the customer base.

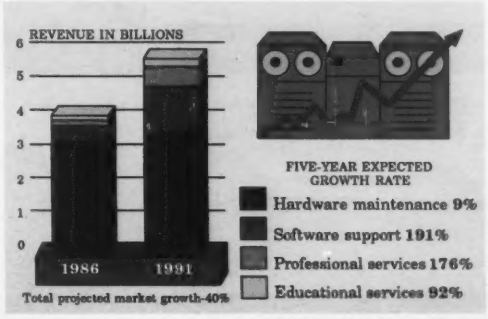
Now, doubt about the future is gone because computers are the new company's sole line of business, Stern claimed. "Bull has no choice but to be successful in the computer market. For the first time they [customers] know where we are going and they know where we want to

Continued on page 99

Data View

Large systems service market

Hardware service will grow very little, while software support and professional services will boom



INFORMATION PROVIDED BY INPUT, INC.
CW CHART: MITCHELL J. HAYES

DG courts Lisp Machine

BY ROSEMARY HAMILTON
CW STAFF

WESTBORO, Mass. — Data General Corp. made an offer last week to buy financially strapped Lisp Machine, Inc., an artificial intelligence systems maker that filed for protection under Chapter 11 of the Federal Bankruptcy Code earlier this month.

DG offered to buy most of Lisp Machine's technology and related assets for an undisclosed amount.

DG's offer is subject to the approval of a creditors' committee, a DG spokesman said.

Continued on page 98

Chip tariff threatens U.S. firms

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — President Reagan's decision to hit Japanese electronics products with 100% tariffs may cause supply or pricing problems for U.S. distributors of Japanese computer products, but analysts predict the sanctions will not last long.

The proposed trade sanctions would double the price of imported Japanese 16- and 32-bit computers, hard disk drives, monitors and magnetic tape, according to U.S. officials' preliminary list of products. That list, however, will be pared down to its final form this Friday, so fewer products will be affected when — and if — the sanctions take effect on that day.

One of the targeted firms, Tokyo-based Hitachi Ltd., said the proposed 100% tariffs would have severe effects on its busi-

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Inside

- International telecom firms to enter U.S. fray. Page 94.
- Merger of two Japanese Unisys subsidiaries nears. Page 99.
- Ashton-Tate puts $2 million public offering on back burner. Page 100.

Fortune Systems to dump hardware

Strapped firm will sell PC business to SCI for estimated $17M to $20M

BY JAMES A. MARTIN
CW STAFF

BELMONT, Calif. — Financially troubled micro vendor Fortune Systems Corp. recently revealed its plan to exit the computer hardware market by selling its microcomputer business to SCI Systems, Inc. in Huntsville, Ala.

Under the agreement, SCI, a $500 million maker of microcomputer components and other electronic parts, will acquire Fortune Systems' research and development, manufacturing, sales, marketing and support operations. Fortune Systems' hardware line includes the Fortune 32-16 Unix-based multiuser system and the Fortune Formula.

The amount paid by SCI to Fortune Systems was not disclosed, but was estimated by analysts at between $17 million and $20 million.

Fortune Systems is selling its hardware business in order to concentrate on its software subsidiary, Tigera Corp. in Redwood City, Calif., and to fund future acquisitions, according to Fortune Systems Chairman and President James S. Campbell.

Seven-year-old Fortune Systems was finding it more difficult to maintain product differentiation in the Unix-based micro workstation market, Campbell said. "In order to maintain any long-term momentum, many smaller companies in that market, such as ourselves, will have to look toward partnerships. We found one that has an interest in our products and can service our customers," he added.

The agreement will not adversely affect Fortune Systems' products or its users, Campbell promised. "Users ought to be pleased that they now have a much bigger corporation behind them, one that is committed to the Unix marketplace," he said.

SCI reported 1986 revenue of some $500 million, while Fortune Systems' 1986 revenue was $38.4 million, with a net loss of $1.7 million.

Fortune Systems' move could very well help pull the company out of its continuing doldrums, analysts said. "Since they went public a few years ago, Fortune Systems has done very little right," said George D. Elling, a technology analyst with Oppenheimer & Co. "Their marketing strategies didn't exactly put the company on the map, and they never really gained any momentum after the technical problems associated with their first product, the Fortune 32-16."

Although Campbell would not comment on Fortune Systems' acquisition plans, analysts said they believe the company could be looking to acquire profitable companies, regardless of the type of business.

SCI offers a line of Unix-based microcomputer systems such as the SCI 1000, 2000 and 3000 series, which are supplied to a variety of military and aerospace customers.

Apple, Compaq, DCA shuffle top executives

BY CLINTON WILDER
CW STAFF

Three major players in the microcomputer market — Apple Computer, Inc., Compaq Computer Corp. and Digital Communications Associates, Inc. (DCA) — reported notable executive changes last week.

Apple announced it has replaced Vice-President and Chief Financial Officer David J. Barram. Deborah A. Coleman, who achieved industry prominence by planning the original automated manufacturing operations for the Macintosh computer, will fill Barram's position.

Coleman, 34, most recently served as vice-president of worldwide operations. In her new position, she will report to Apple Chairman and Chief Executive Officer John Sculley.

Coleman has risen rapidly through the manufacturing ranks during her six years at Cupertino, Calif.-based Apple. She began as controller of the Macintosh group and later became operations manager of the Macintosh division, director of worldwide manufacturing and vice-president of operations.

Barram, 43, was named vice-president of corporate affairs and will report to Senior Vice-President Albert Eisenstat.

Barram, the former chief financial officer of Silicon Graphics Computer Systems, Inc., was named to the same post at Apple two years ago.

Apple said Coleman will be replaced as operations head by Ralph Russo, 39, who was Apple's director of international operations.

Compaq cofounder retires

Houston-based Compaq announced that one of its three co-founders will resign next Monday to pursue a religious vocation. William H. Murto, Compaq's vice-president of sales since June 1985, said he had been planning the career change for several years.

Director of Corporate Sales Ross A. Cooley will replace Murto as vice-president of sales. Vice-President of Marketing Michael Swavely will be given additional responsibility as well as the new title of vice-president of sales and marketing.

Compaq President and CEO Rod Canion said the company has been planning for Murto's departure for more than a year.

Ottinger takes DCA presidency

DCA Chairman and CEO Bertil D. Nordin relinquished the president's position to James Ottinger. Ottinger is the former president and CEO of Forte Communications, Inc., which DCA acquired in February 1986. Ottinger had been president of DCA's personal computer communications group.

Nordin will concentrate on strategic corporate development at DCA, while Ottinger will head day-to-day operations.

In addition, Alpharetta, Ga.-based DCA promoted Chief Financial Officer Craig Huffaker to the position of executive vice-president.

X.25's international appeal

Siemens, Philips eye U.S. packet-switching market

BY ELISABETH HORWITT
CW STAFF

LAS VEGAS — Two international telecommunications equipment vendors have announced intentions to zero in on what they perceive as burgeoning U.S. data communications markets.

At the recent Interface '87 show, Paris-based Telecommunications Radioelectriques et Telephoniques (TRT) revealed plans to market four high-speed modems and two X.25 packet-switches through its Dallas-based subsidiary, Philips Information Systems, Inc. And Siemens Data Switching Systems, a subsidiary of West Germany-based Siemens AG, announced it would begin selling packet switches to large end-user companies.

The Hauppauge, N.Y.-based company has for several years sold its line of X.25 Advanced Network Control Processor and Network Control Centers to divested Bell operating companies.

Both Philips and Siemens cited their international presence as a strategic advantage in an already crowded X.25 equipment market.

TRT and its Philips subsidiary hope to "address the needs of U.S. customers that need ports in different companies," with equipment based on "two major standards that have won worldwide acceptance," the CCITT V.32 standard for 9.6K bit/sec. dial-up modems, and the X.25 packet-switching standard, explained Francois Leraillez, TRT's director general adjoint.

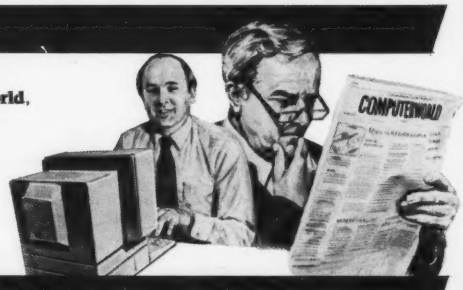
TRT said it also plans to leverage its European presence in its drive to meet U.S. companies' international communications needs. "We provide the expertise as well as the switches," said TRT Marketing Director Marc Houery. "It is tricky applying international standards —

How to take the high risk

SAN FRANCISCO, CALIFORNIA • 8:15 A.M.

An in-depth cover story by Jim Connolly, in International Data Group's weekly, **Computerworld**, immediately arouses the apprehension of the Chief Information Officer (CIO) of an international company headquartered in California. The new minicomputer system his Information Services Team plans to purchase for their international offices is reported to be experiencing an alarming rise in downtime.

A multi-million dollar decision hangs in the balance.



FRAMINGHAM, MASSACHUSETTS • 11:20 A.M.

The CIO calls International Data Corporation (IDC) Vice President Frank Gens, who sets in motion an international study of the operating record of the minicomputer at its user sites, worldwide.

FRAMINGHAM, MASSACHUSETTS • 12:30 P.M.

Rebecca Segal, director of **IDC's Customer Service Program**, quickly assembles a task force which combines the talents of IDC researchers and analysts, and CW Communications, Inc. editors and reporters.

Computerworld Editor Bill Laberis and industry specialist Pete Bartolik, begin scrutinizing **CW Communications' News Network** database to retrieve pertinent information about the computer system in question from IDG's 85 publications around the world.

EUROPE, ASIA, SOUTH AMERICA • 2:00 P.M.

IDC field researchers in 12 countries interview the users of the minicomputer, review their usage patterns, examine work loads and determine levels of support available from local service personnel.

they are not always the same from country to country."

TRT is the eighth largest high-speed modem manufacturer worldwide, Leraillez said. TRT manufactures modems and wide-area network equipment and distributes through its own sales offices in France, while Philips manufactures private branch exchanges and workstations and distributes both its own and TRT's products in Europe and the U.S.

Siemens spokesmen predicted that the company will gain between 10% and 15% of the corporate packet-switching equipment market during the next three years. The U.S. market should grow from an estimated $344 million in sales in 1986 to $809 million in 1989, according to a February report by Salomon Brothers, Inc.

The U.S. market is already overcrowded, however, with success "increasingly requiring both credibility and deep pockets," said J. Michel Guite, a Salomon Brothers vice-president.

"There is no question that X.25 has seen a faster acceleration path in Europe than in the U.S.," Guite said. "So international companies do bring credibility to U.S. customers with whom they have existing relations."

But leading X.25 vendors such as Telenet Communications Corp. and Northern Telecom Inc. also have an international presence, "and being a world-class entity hasn't helped Siemens' PBX sales," Guite said.

According to another agreement announced at Interface, Mitel Datacom, Inc. in Herndon, Va., will begin marketing in North America data communications equipment from British Telecom Datacomms, a division of $12 billion telecommunications company British Telecom International, Inc.

The agreement furthers British Telecom's goal of "becoming a significant force worldwide in the data communications field" by establishing "a strong, long-term presence in North America," noted Michael Buckley, the company's general manager.

Initially Mitel Datacom, a subsidiary of Mitel, Inc., will market British Telecom's high-speed modem line, including a 9.6K bit/sec. dial-up modem that conforms to the CCITT V.32 standard, a British Telecom spokesman said.

Amiga dons suit

CONTINUED FROM PAGE 93

Commodore promises AT compatibility within months.

Commodore's business-market strategy is fairly simple. Give the customer IBM compatibility in a $1,500 machine that also runs audio, video and some of the best color and graphics around. Needless to say, the desktop publishing field is in Commodore's sights. "Desktop publishing is not the Macintosh's sole preserve," Rattigan says.

Rattigan points out that in West Germany, Canada and other countries, Commodore is and always has been a leading supplier of micros to business customers. The only place where Commodore really carries the tag of being a hobbyists' vendor, he says, is the U.S.

Commodore does seem to have one necessary quality going for it in this effort: patience. "We have to prove to this market what this machine can do, and it will take time," Rattigan says. "With the Macintosh, Apple identified an interesting niche and is resurging. But even with all that company had going for it, look how long it took them."

One cannot underestimate the difficulty of Commodore's challenge, particularly in a market now further confused, and perhaps soon to be polarized, by IBM's new micro generation. To have a chance, Commodore would be well advised to avoid a common pratfall: expecting that the 2000's graphics and advanced features will sell themselves on their technology alone. That strategy hasn't worked in the corporate PC world for a long time.

GEORGE RAYMOND MAY NOT BE well known outside of ADAPSO circles, but he could be called one of the industry's unsung heroes.

Last fall, Raymond, president of Moorestown, N.J.-based Automatic Business Centers and last year's ADAPSO chairman, conceived the ADAPSO Foundation as a vehicle to raise funds and coordinate industry support for computer-related technologies to aid the handicapped. At its announcement (which was overshadowed by Management Science America, Inc.'s Comserv Corp. buyout announcement at the same press conference), the idea seemed noble, but it was not clear what the technologies would be.

Five months later, Raymond reported back to the ADAPSO membership with a concrete example of what he was talking about. In Wayne County, Mich., Raymond found a computer buff/handicapped childrens' counselor who had invented a device called the Wolf, which allows mentally handicapped and vocally impaired people to communicate. By touching the device's icon keyboard, the handicapped user activates spoken, computer-generated phrases.

Of the $100,000 it has raised since November, the ADAPSO Foundation has contributed $25,000 for the production and distribution of more Wolf devices to the voice impaired, which includes distribution of the machines outside Michigan.

Aside from its charity, Raymond's idea is an excellent way to help showcase the positive use of technology in society.

Wilder is *Computerworld's* senior editor, computer industry.

out of high tech decisions.

SYDNEY, AUSTRALIA • 9:55 A.M.
Len Rust, managing director of IDC Australia, and the CEOs at 11 other IDC international research offices evaluate the field researchers' findings and compare them to the current minicomputer maintenance and support experience for various brands in their markets.
FRAMINGHAM, MASSACHUSETTS • 4:00 P.M.
The preliminary findings arrive via fax, telex and E-mail to be analyzed by IDG's project task force. IDC Senior Analyst Tim Caffrey writes the final report which points out that the minicomputer in question is experiencing a high failure rate, and the supplier's maintenance teams in seven key countries are not adequately trained to keep it up and running.
SAN FRANCISCO, CALIFORNIA • 5:45 P.M.
Based on the study's findings, the CIO decides to cancel the previous purchase order, and asks that his Information Services Team make an alternative purchase based on IDC's maintenance assessments and recommendations.

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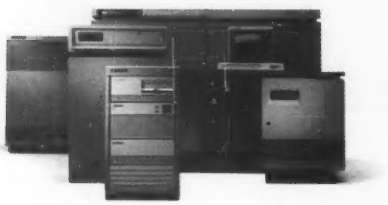

HP 3000 family: Micro 3000 XE, Series 52, 58, 70, 930 and, not shown, Micro 3000 and Series 950.

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HEWLETT PACKARD

Business Computing Systems

Chip tariff

CONTINUED FROM PAGE 93

ness and make the export of products to the U.S. "virtually impossible."

A cutoff in Hitachi exports would be a big blow to National Advanced Systems Corp. (NAS), based in Mountain View, Calif., which is the U.S. distributor for Hitachi mainframes and disk drives.

"It would take away almost half of their business, roughly $250 million worth on this year's revenues," said James Barlage, analyst at Smith Barney, Harris Upham & Co. in New York.

But Barlage said he doubts the U.S. government will impose tariffs on mainframes because that would hurt NAS's parent firm, National Semiconductor Corp., more than it would hurt Hitachi.

NAS will prod Feds

An NAS spokesman acknowledged that the proposed sanctions would jeopardize its mainframe and disk drive business, but he said the firm will urge the U.S. government to revise its product list. "We believe the government doesn't intend to damage U.S. companies," he said.

An industry source said the worst case damage would be the loss of 30% to 40% of NAS's revenue base. The source noted that Hitachi will begin U.S.-based manufacturing of disk drives at its Norman, Okla., plant on April 30.

Amdahl Corp., which has its mainframe disk drives made in Japan by Fujitsu Ltd., may have only a short-term problem. A spokesman for Sunnyvale, Calif.-based Amdahl said Fujitsu will begin manufacturing disk drives at a new plant in Portland, Ore., in the third quarter of this year.

Officials at NEC Corp. and Toshiba America, Inc. declined comment on the proposed tariffs but expressed hope that the U.S. and Japanese governments will negotiate an end to the trade dispute.

The actual effect of the proposed tariffs will not be known until after a final list of targeted products is released Friday. The U.S. government may order the sanctions to be retroactive to March 31 to prevent Japanese firms from rushing products to the U.S. to beat the April 17 announcement.

The sanctions result from Reagan's decision late last month to retaliate against Japan's alleged failure to live up to the U.S.-Japan Semiconductor Agreement negotiated in July 1986 [CW, April 6].

An eye for an eye

The tariffs are expected to total $300 million, an amount roughly equivalent to the economic harm done to U.S. semiconductor firms, officials said. The sanctions hit various Japanese electronics products, rather than chips, in order to protect U.S. manufacturers that use Japanese chips from tariffs.

U.S. Secretary of Commerce Malcolm Baldrige said the list of Japanese products earmarked for sanctions contains products "sold by the companies who make the chips and who were doing the dumping." The unofficial targets include NEC, Hitachi, Fujitsu, Toshiba and Oki Electric Industry Co.

But industry analysts predicted the sanctions will not last long because the Japanese government's efforts to respond to U.S. semiconductor trade complaints are beginning to show results, and U.S. chip prices are on the upswing.

"This [tariff] action probably will be implemented for only a very short period of time because corrective action is taking place," said Ulric Weil, an industry analyst who heads the Washington, D.C., office of the Gartner Group, Inc.

"The administration finally took action, justifiably, but as usual they waited too long. The Japanese were in the process of taking care of the problem by holding up export licenses and really clamping down" on Japan's chip makers, according to Weil.

Alan Wolff, counsel to the Semiconductor Industry Association, said the Reagan administration is likely to take a second look at the issue early in the summer to see if semiconductor trade has improved.

DG courts exec

CONTINUED FROM PAGE 93

The spokesman confirmed that an offer was made to Ward MacKenzie, Lisp Machine's president. He would not say what position MacKenzie might hold on the DG staff.

MacKenzie was not available for comment.

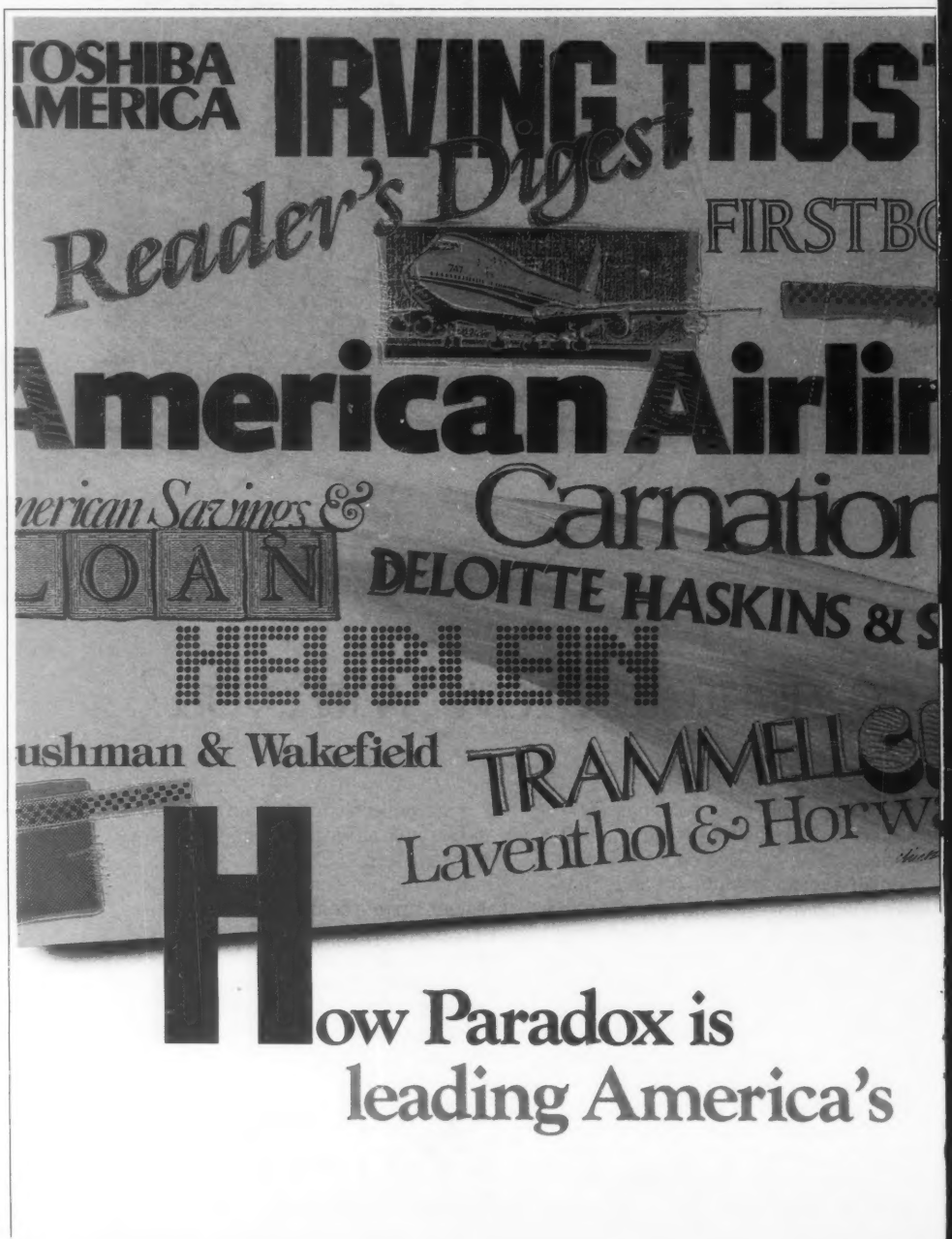
To date, DG has not had a presence in the AI market. "We've been looking into that area for some time, but we haven't made a major effort," the company spokesman said.

Robert Kerwin, a Boston attorney representing Lowell, Mass.-based Lisp Machine in its bankruptcy proceedings, said he has filed a motion with the court last week to free MacKenzie from his contract with Lisp Machine. The contract expires in June.

Kerwin would not comment on the possibility of DG acquiring Lisp Machine, nor would he confirm speculation that at least two other firms have expressed an interest in purchasing that firm.

He said it was the "express preference" of Lisp Machine's management to sell the company as a "complete package," rather than to sell off rights to the hardware and software.

Lisp Machine, which had raised nearly $40 million in venture capital since its founding in 1980, listed $7.4 million in assets and $16 million in liabilities in its bankruptcy filing.



Unisys Japan subsidiaries prepare to merge

BY YASUKO YOSHIMI
SPECIAL TO CW

TOKYO — The long-awaited marriage between the two Japanese subsidiaries of Unisys Corp. — Nippon Univac Kaisha Ltd. and Burroughs-Japan — is expected to become final in three to four months.

The news was revealed at a press conference by Nippon Univac, Japanese subsidiary of the former Sperry Corp., currently controlled by Unisys and Mitsui & Co., a leading Japanese trading house. The basic merger agreement was reached last month between Unisys Chairman W. Michael Blumenthal and Mitsui President Kohichiro Ejiri. A committee to finalize details of the deal will be formed by officials of the four companies.

The merger is expected to move the combined Nippon Univac and Burroughs-Japan to the No. 5 position in Japan's mainframe computer industry, behind Fujitsu Ltd., NEC Corp., Hitachi Ltd. and IBM Japan Ltd. Annual sales are estimated to top $1.47 billion.

According to industry analysts, the two vendors will not be overlapping product lines because they participate in distinctly different markets. Nippon Univac targets large securities firms with large mainframes, while Burroughs-Japan has targeted small and mid-size regional banks.

The union, however, will not be without financial complications. Nippon Univac is presently controlled not only by Unisys and Mitsui (each with a 34% share), but also with minority shares held by Mitsubishi Electric Co. and Oki Electric Industry Co.

Yoshimi is the Tokyo-based correspondent for the Asian bureau of the CW Communications International News Service.

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Capital Gains

Paradox is faster than dBASE across the board, sorting records at twice the speed. "The only thing you give up when you leave dBASE is frustration," notes Salcedo.

Paradox Application Language (PAL) helps programmers build rich applications in less time, cutting development costs by up to two-thirds.

Everything considered, it's no wonder that at Trammell Crow, eight departments independently decided to make it their standard.

Mega Trend

This grass roots support is sweeping companies everywhere. Paradox is taking over the database standard at Brown & Williamson, Sperry & Hutchinson, Litton Guidance and Control, and hundreds more. Observes software developer Burt Alcantara: "Paradox is clearly the standard for speed, performance and ease of use. Widespread acceptance is making it the industry standard as well."

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Stern Bullish

CONTINUED FROM PAGE 93

go," he said.

Like many others, Stern sees the major opportunity in computing to be in distributed processing and networking. And he sees the U.S. Goliath, IBM, to be vulnerable in these areas. Honeywell Bull's strategy will be to sell aggressively in the departmental market and play its Open Systems Interconnect (OSI) networking card.

"We don't compete to take out IBM installations," he said. "We want to put a departmental computer around an IBM system. By having an open network capability based on a standard, we can coexist with all systems."

Advantage over DEC

Stern went further, however, to claim an advantage over the lion of the mid-range, Digital Equipment Corp. "DEC cannot have three strategies — proprietary, SNA and OSI," he said.

Stern emphasized that Honeywell Bull's DSA networking scheme is based on OSI, making the vendor's only other critical requirement a gateway to IBM's Systems Network Architecture (SNA), which Honeywell Bull already offers. While Honeywell Bull offers an SNA gateway, it offers no Decnet gateway, and Stern said he sees no need for one.

Taking another jab at DEC's single-operating-system strategy, Stern said, "No one has proven that with only one operating system you can do better."

He defended Honeywell Bull's three major architectures as being consistent with the way most computing is done. "There are three segments of the market — workstations, servers and departmental computers and mainframes," he said.

Despite some notable failures of European companies seeking to gain a U.S. market share in computers as well as other industries, Stern said he is not deterred by the daunting difficulties others have found.

'Not a takeover'

"We know that most European companies have not been successful here. We are not concerned. This is not a takeover, after all," he said. Citing 15 years of cooperation between Honeywell, Bull and NEC, he said the product line will remain essentially the same. "We will do the same things as before, but better," he added.

"You cannot just look to expand your market here. You must look at the U.S. as the first market," he continued, holding up the examples of Michelin and Schlumberger Ltd. as examples of European efforts that disprove the notion that success is impossible.

In addition, Stern pointed to his own experience with SESA, a software and data communications company he founded that was successful in Europe but did not succeed in the U.S. He said he will not repeat the mistake of making too weak a commitment to the American market.

Summarizing Honeywell Bull's chances against the American titans, IBM and DEC, Stern offered, "How smart you are is not a question of size. . . . Everybody asks what we do against IBM and against DEC. But the customer always chooses for himself. It's not a question about computers themselves, but solving a customer's problem."

Ashton-Tate hits brakes on public offering

BY JAMES A. MARTIN
CW STAFF

TORRANCE, Calif. — Ashton-Tate last week reported that the firm would not proceed with previously announced plans for a $2 million public offering because of strong fluctuations in its stock price.

Because Ashton-Tate common shares have been trading for between $21.50 and $26 per share, the company has decided not to proceed with its intent to file, fearing it would not be able to pin down an accurate cost per share, a company spokesman said.

Analysts speculated on other reasons Ashton-Tate withdrew its offer. One consideration was IBM's announcement last week that its new Operating System/2 will have a relational data base built in, which could adversely affect sales of Ashton-Tate's microcomputer data base products.

'Could pose a problem'

"IBM's announcement, in some people's minds, could pose a significant problem to Ashton-Tate that could cause them not to make their earnings projections," according to Brian Mutert, a software analyst with Robertson, Colman & Stephens in San Francisco.

"Also," Mutert continued, "there's the consideration that the investment public will not be willing to fund the company because of IBM's announcement."

In reality, however, IBM's OS/2 should not affect Ashton-Tate's performance to any large degree. Even if OS/2 does affect the firm, the impact would not be felt until late 1988, Mutert said.

"Overall, we believe Ashton-Tate is fundamentally sound and concerns about IBM's offerings are completely overblown," he said.

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MERGERS & ACQUISITIONS

Nestar Systems, Inc., the local-area network subsidiary of **DSC Communications Corp.**, announced the recent acquisition of **Intelligent Access.**

Terms of the acquisition were not disclosed. The combined companies will offer end users an expanded family of productivity tools and innovative processing methods to address the increased demands placed upon personal computer disk products and networks.

Intelligent Access founders George Morrow and Darrell Ticehurst will join Nestar as vice-presidents in Nestar's newly formed Small Systems Division. Morrow is a pioneer designer of circuitry for microcomputers and the founder of Morrow Designs. Ticehurst is the founder of Quest, Inc., a software firm specializing in applications that was later acquired by Uccel Corp.

Monogram Software, Inc. and **Star Software Systems** announced an agreement to merge the two privately held companies into a supplier of microcomputer-based accounting and financial management software for small business and personal use.

Monogram and Star said they plan to merge the companies through an equal exchange of stock. The merger will take effect this month. The new company will be headquartered at Star's facility in Torrance, Calif.

Monogram was founded in 1982 to develop and publish high-quality financial software products for personal and small business markets. Star, founded in 1980 as Star Computer Systems, Inc., develops and publishes microcomputer accounting, billing, word processing, property management and data base management software for the small business market.

Novell, Inc. announced the signing of a definitive agreement for the acquisition of **Softcraft, Inc.** in exchange for 130,400 shares of Novell common stock. Softcraft will retain its own name and will be a wholly owned subsidiary of Novell. The acquisition will be accounted for as a pooling of interests. Softcraft, Inc. is an Austin, Texas-based developer of high-performance programming tools best known for Btrieve, its data base utility.

Cheyenne Software, Inc., a software services company, is in preliminary negotiations to acquire two computer hardware distribution firms, **F. A. Components, Inc.** and its affiliated company, **Freeman-Owings, Inc.**

F. A. Components has its headquarters and principal warehouse in Elmhurst, N.Y., and operates two additional regional warehouse locations in Fort Wayne, Ind., and Seattle. Freeman-Owings has its headquarters and principal warehouse in Greenville, S.C.

Anacomp, Inc. has acquired 100% of the common stock of **Datagraphix, Inc.** from **General Dynamics Corp.** for approximately $128 million. Anacomp, which had sales of $108.8 million for the year ended Sept. 30, 1986, is financing the transaction with a new bank credit agreement and the private placement of senior subordinated notes and convertible preferred stock.

Job searching highs and lows

The more you make, the longer finding the right position will take

BY NANCY BLUMENSTALK MINGUS
SPECIAL TO CW

The more money you make, the more time you must invest in looking for a new job. Data processing and MIS professionals usually search one month for every $10,000 in total salary they are seeking, estimates Brian Krueger, branch manager of Datapro Recruiting, Inc. in Milwaukee.

Executive-level professionals will probably spend more time on the job search than their lower level counterparts because fewer high-paying positions are available.

"Executives in high tech have a narrow experience base. When they can't find positions in DP, they are generally unable to switch to other executive positions," says Jackie Schwartz, a Los Angeles-based management consultant.

DP catch-22

Unfortunately, they often cannot return to technical-level positions, either. One ex-vice-president of systems, describing this catch-22 situation, says, "The DP field has changed so much. Employers are looking for technical skills. But the skills I have are now outdated. Basically, it's like starting over."

MIS professionals at a less lofty level will find more job opportunities, Krueger says. Candidates with two to five years of DP experience have the best chance of obtaining the positions they want. Job seekers with that level of experience are "on the upslope in their career path, yet their skills are still somewhat generic, giving them a wide market to deal with," Krueger adds.

Job hunters should use a combination of strategies in their search. Though some openings are not advertised, many companies' hiring policies require them to advertise in national and local publications before they turn the search over to a recruitment agency. This means checking the want ads is still a good way to get leads.

MIS professionals can also find the right job by cultivating professional and personal contacts. Networking is an indirect way to seek a position, but nearly one-third of all MIS jobs are found that way, estimates Steve Adamson, president-elect of the Orange County, Calif., chapter of the Association for Systems Management.

For example, an MIS administrator facing a layoff responded to the news by contacting everyone she knew at her company's vendors. Her relatives distributed resumes to DP people they knew, and her co-workers spread the word. She found a new job in less than two months.

Employers also benefit from networking because the candidates they hear about through the grapevine usually come with references from current employees. In another example, a programmer/analyst found a job with a company that had not formally announced an opening. The firm created a position for the programmer because she came to the company highly recommended by a valued member of the department.

Networking also provides monetary benefits. If a person is referred by a friend rather than through a recruiter, the company pays no recruiter's fee, which is usually 25% of the hired person's salary. Pleased by this savings, the employer may sweeten the salary offer.

To build a network, job seekers should join DP organizations, become active members and even run for office. Visibility is the key. When people are reminded of someone's qualifications on a regular basis and see that person as a doer, they remember him when openings occur.

An effective job hunting strategy entails using your network of contacts as well as working through a recruiter. Many MIS professionals have an aversion to the word "recruiter." One MIS administrator puts it bluntly: "They send your resume to everyone in town and then forget you."

Some less reputable firms may not do an effective job, but most recruitment companies are reliable and offer certain benefits, such as knowing where the jobs are and matching candidates with appropriate employers. According to Datapro Recruiting's Krueger, "We typically know about jobs before they are advertised. We fill a lot the general public never knows about."

Most agencies also have computerized referral lists. They can match someone to a position by industry, application experience or degree.

If necessary, most agencies will also help you develop a resume and coach you on interview skills. The ex-vice-president of systems recalls, "I didn't have a resume. I didn't keep track of my major duties and accomplishments. It's hard to recapture 24 years of experiences."

Pick a recruiter carefully

Because some recruiters offer more services than others, the job hunter should be careful about picking an agency. Krueger advises, "Don't go with the first recruiter you find. Take the time to choose a company and person you can work with. Go with a DP specialist firm and a recruiter who has been in DP."

You should also use a particular agency exclusively. Give the recruiter a month to see how he does, and then switch if you are not satisfied.

Finally, the best way to take the pressure off the job hunt is to look for a position while you're still employed. Krueger says, "One of the greatest faults of people in DP is they feel they have to look full time. They resign, and they can't find another job. When a prospective company finds out they are not working, they wonder why."

> "ONE OF THE greatest faults of people in DP is they feel they have to look full time. They resign, and they can't find another job. When a prospective company finds out they are not working, they wonder why."
>
> BRIAN KRUEGER
> DATAPRO RECRUITING, INC.

Blumenstalk Mingus is a free-lance writer based in Buffalo, N.Y.

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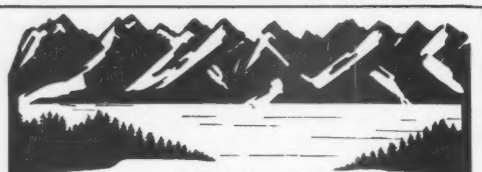

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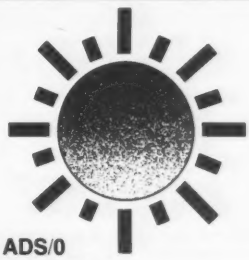

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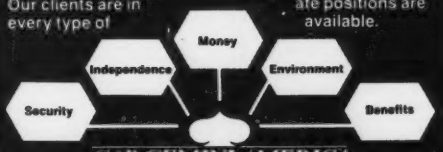

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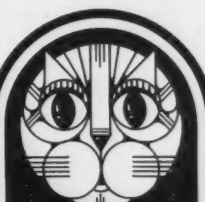

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Requires at least 2 years experience in a large IBM mainframe environment utilizing OS or MVS/XA, COBOL, TSO, ISPF, JCL, PANVALET and IMS DB/DC. Also requires working knowledge of COBOL, IMS, DYL/280, 4GL, structured methods and experience with one of the following systems:

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Please send your resume to: Steven Martin, NORTHROP ADVANCED SYSTEMS DIVISION, Employment Office, Dept. CW2516, P.O. Box 1138, Pico Rivera, CA 90660-9977. Northrop provides its employees a competitive, comprehensive benefits package.

Modem Users: You can access a complete listing of career positions with your home computer and a modem. Dial **(612) 941-5723** and enter the password "Career Access" for 24-hour information. ***Bit settings: data 8, stops 1, no parity, full duplex 300/1200 baud, enter password (Career Access), CR upon entry.***

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Advanced Systems Division

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This position will analyze and evaluate user requirements through structured design methodologies. Specific activities include:

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The successful candidate should have:

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REQUIREMENTS:

Bachelor of Science in computer science or engineering, physical science, mathematics if strong computer background present, business programming and/or business programming management. Must have thorough working knowledge of Burroughs large computer systems used by corporation, such as B1900, B6900, and B7900. Two years experience with these systems is minimum requirement. Must have one-year experience in project/team leadership with respect to computer resources and management experience in computer science, and six months experience in computer applications for nurseries or agricultural uses. Salary: $32,000/year (40 hours/week, no overtimepay)

LOCATION:

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Candidates who wish to apply and meet the above requirements should send their resume to: **The Oregon Employment Division, Attn: Job Order Number 2120315, 875 Union Street, N.E., Room 201, Salem, OR 97311.**

Technical Systems Manager for multicolor commercial printing company in Cincinnati, Ohio. Will manage printing division technical systems, organize and implement IBM 36 and VAX systems linking multiple printing facility locations; network Automatic Data Collection system, bar coding and operation information of webs transmissions between locations and interface same with the IBM 36 for consolidation, system control and uniformity of printing and graphics operations; develop software upgrades for and operate Scitex image processing system; evaluate and monitor internal procedures concerning Scitex system; coordinate and oversee image processing and CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) for multiple location and color reproduction on various printing projects. Requires M.S. degree in Printing Management and one year's experience as Systems Engineer, EDP (also called Systems Manager). Academic background (during this degree program or any other program whether it resulted in a degree or not) must include courses in Cost Justification for CAD/CAM and Introduction to Computer-Aided Design and Color Reproduction. Must know Fortran and BASIC languages either through academic training or experience. Experience must include work with printing computerization and computer graphics. 40 HR/WK. $35,000/year. Qualified applicants reply immediately with resume to L. Ellison, JO#0685923, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, Ohio 43216.

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Responsible for development of operating system functions. Duties include installation, configuration and maintenance of operating system. Will test, evaluate, and modify application software packages. Must work with operating systems, hardware and high-level programming languages such as Xenix operating system, device drivers and TAHOE hardware, UNIX V, and Multibus II hardware line. Assembly, C, FORTRAN and PASCAL. Experience to include installation and maintenance of system control programs evaluation of software packages and implementing computer network. Master or equivalent in Computer Science plus 2 yrs. exp. $3,230/mo. Job Site: Hillsboro, OR. Clip this ad and send with resume to: Employment Division, Attn: Job Order Number 2120319, 875 Union Street NE, Room 201, Salem, Oregon 97311.

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Employment Coordinator
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Control Systems Engineer; 40 hrs/wk; 8 a.m. - 5 p.m.; $45,000/yr. Job requires Ph.D. in Mechanical Engineering. Job also requires grad level research in digital control systems including analytical and experimental work with emphasis on microprocessor applications as evidenced by Ph.D. dissertation. Job also requires 1) 2 grad courses in Modelling of Dynamic Systems, and 2) 1 grad course in EACH of the following: a) Nonlinear Control Systems, b) Micro Computer Programming and Interfacing, and c) Minicomputer Programming and Interfacing. Job Duties: Design control systems for anti-lock brake systems and traction control systems for vehicles using modern control techniques. Develop complete models of vehicle dynamics for real-time simulation on an AD-100 computer in ADSIM simulation language. Evaluate the control algorithm by digital simulation, hardware-in-loop simulation and by implementation on the vehicles. Develop software in assembly language for implementation on microcomputer. Qualified applicants should send resumes and verification of reqs to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #19567. Employer pd ad.

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Please send resume with present salary history, indicating position for which you are applying, to Personnel Dept. CW-4/13, SYSOREX INTERNATIONAL, INC., 10590 N. Tantau Ave., Cupertino, CA 95014. U.S. CITIZENSHIP REQUIRED. Principals only apply.

SYSOREX
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Applicants should have the equivalent of a Ph. D. degree in information science, computer science, or a closely related field; and a minimum of 10 years' experience, at least 3 of which must involve the supervision of professional personnel, preferably in a scientific research environment. An excellent reputation in the field is essential, as is a record of successful development of computerized information systems. This position requires the ability to integrate and control several diverse projects simultaneously in order to accomplish critical divisional and interdivisional information systems goals. A general knowledge of several scientific disciplines is necessary in order to communicate effectively with the scientific staff. Excellent interpersonal skills are required, as is the ability to communicate effectively orally and in writing.

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Copies of this RFP may be obtained by writing: Roy F. Katz, Director, Bureau of Budget and Computer Planning, 250 Livingston St., Brooklyn, New York 11201, or by calling Kay A. Woods, at (718) 403-1860. The non-refundable cost is twenty-five ($25) dollars per copy. Only cash or certified check payable to the New York City Fire Department will be acceptable.

The pre-bid conference will take place on Tuesday, APRIL 21, 1987 at 10:00 a.m. in the Commissioners Conference Room, 7th Floor, 250 Livingston Street, Brooklyn, New York.

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June's *Computerworld Focus* will help our readers sort out this seemingly complex issue from start to finish. It'll discuss power conditioners for micros, minis, and mainframes . . . detail available product options . . . examine the growing value of fault-tolerant computing systems . . . look at the increasing importance of network security . . . and study how hundreds of other managers are successfully implementing data security systems. Plus—a special feature section will focus on disaster recovery.

Computerworld Focus puts you in touch with a powerful audience of MIS professionals involved in a market which spends over $120 billion annually. You'll reach our paid circulation of over 127,000 subscribers as well as thousands of pass-along readers. Plus, bonus distribution of the June *Focus* issue at NCC '87 in Chicago will put you in touch with thousands more.

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Micro-to-mainframe security issues. A look at what can happen when uploading and downloading from PCs to mainframes and how to best safeguard data base information.

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For more information, contact Ed Marecki, Vice President/Sales, *Computerworld Focus*, 375 Cochituate Road, Box 9171, (617) 879-0700. Or call your local *Computerworld* sales representative.

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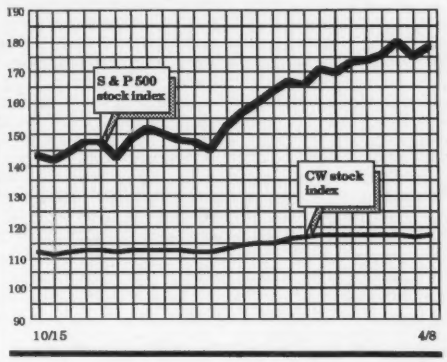

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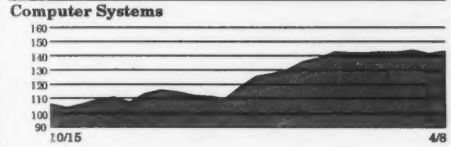

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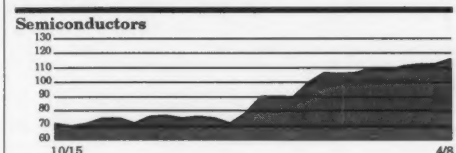
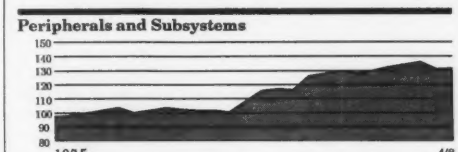
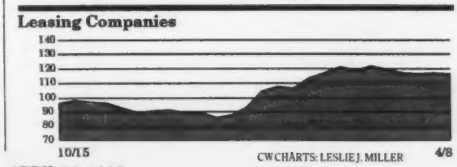


Peripherals and Subsystems



Leasing Companies



CW CHARTS: LESLIE J. MILLER

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, APRIL 8, 1987

Computer Systems

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 8 1987	WEEK NET CHNGE	WEEK PCT CHNGE
O	ALPHA MICROSYSTEMS	8	4	4.50	+0.3	+5.9
O	ALTOS COMPUTER SYS	19	10	13.75	+0.3	+1.9
A	AMDAHL CORP	41	14	36.63	+0.1	+0.3
O	APOLLO COMPUTER INC	23	9	18.63	-1.1	-5.7
O	APPLE COMPUTER INC	73	27	69.00	+2.3	+3.4
N	AT&T	28	22	24.13	+0.3	+1.0
O	C P T CORP	6	3	4.13	-0.1	-2.9
N	COMPAQ COMPUTER CORP	35	12	32.38	+2.8	+9.3
A	COMPUTER CONSOLES INC	12	7	9.50	+0.1	+1.3
O	CONCURRENT COMP CORP	19	11	16.25	+0.5	+3.2
N	CONTROL DATA CORP	33	20	31.25	+1.4	+4.6
O	CONVERGENT TECH	12	4	9.63	+0.0	+0.0
N	CRAY RESH INC	136	69	130.00	+4.8	+3.8
O	DAISY SYS CORP	15	8	9.88	+0.1	+1.3
N	DATA GEN CORP	45	25	32.25	+0.4	+1.2
N	DATAPOINT CORP	9	4	5.25	+0.1	+2.4
N	DIGITAL EQUIP CORP	173	111	165.50	+3.3	+2.0
N	FLOATING POINT SYS INC	46	11	13.50	-0.5	-3.6
N	GOULD INC	28	15	16.88	-0.9	-4.9
N	HARRIS CORP	40	27	38.50	+0.6	+1.7
N	HEWLETT PACKARD CO	63	36	56.00	-1.0	-1.8
N	HONEYWELL INC	84	58	75.00	+4.6	+6.6
N	IBM	162	116	147.63	-3.5	-2.3
O	IPL SYS INC	4	2	3.00	+0.3	+9.1
N	ITT CORP	66	44	62.00	+1.8	+2.9
N	M A COM INC	24	12	14.63	+0.0	+0.0
N	MATSUSHITA ELEC INDL LTD	136	77	104.50	+4.0	+4.0
O	MENTOR GRAPHICS CORP	29	11	26.88	+0.6	+2.4
N	NBI INC	14	8	11.38	+1.0	+9.6
N	NCR CORP	70	42	66.88	+1.1	+1.7
N	PRIME COMPUTER INC	24	16	20.75	-0.5	-2.4
O	STRATUS COMPUTER	38	18	35.25	-1.3	-3.4
O	SYMBOLICS INC	15	4	5.38	+0.0	+0.0
O	TANDEM COMPUTERS INC	75	24	73.75	+2.3	+3.1
N	TANDY CORP	56	31	49.50	+1.5	+3.1
N	TEXAS INSTRS INC	198	103	196.13	+5.6	+3.0
A	ULTIMATE CORP	35	13	21.75	+0.0	+0.0
N	UNISYS CORP	113	58	103.63	+6.6	+6.8
A	WANG LABS INC - B	20	11	15.13	-0.5	-3.2
A	WANG LABS INC - C	20	11	15.31	-0.1	-0.4
N	XEROX CORP	78	49	76.50	+0.1	+0.2

Supplies & Accessories

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 8 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMER BUSINESS PRODS	37	23	29.75	-0.6	-2.1
N	BARRY WRIGHT CORP	24	14	18.88	+0.9	+4.9
A	DUPLEX PRODS INC	23	18	21.00	+0.1	+0.6
N	ENNIS BUSINESS FORMS INC	23	14	22.25	+2.3	+11.3
N	3M CO	140	97	135.88	+6.5	+5.0
N	MOORE LTD	28	20	26.63	+1.5	+6.0
O	STANDARD REGISTER CO	53	32	46.50	-0.8	-1.6
N	WALLACE COMPUTER SVCS	50	37	48.38	+0.9	+1.8

Software & DP Services

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 8 1987	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	7	3	4.63	-0.3	-5.1
N	ADVANCED SYS INC	22	12	21.00	+0.8	+3.7
N	AGS COMPUTERS INC	40	17	36.00	+1.3	+3.6
O	AMERICAN MGMT SYS INC	36	13	34.75	+4.5	+14.9
O	AMERICAN SOFTWARE INC	22	6	20.75	+3.0	+16.9
N	ANACOMP INC	8	3	7.63	+0.3	+3.4
O	ANALYSTS INTL CORP	11	4	9.50	-0.3	-2.6
O	ASHTON TATE	30	10	25.00	+1.0	+4.2
O	ASK COMPUTER SYS INC	17	9	14.63	+0.4	+2.6
O	ASTRADYNE COMP IND	3	1	1.41	-0.1	-8.2
N	AUTOMATIC DATA PROC	51	29	50.00	+3.6	+7.8
O	BOOLE & BABBAGE INC	11	4	9.00	-0.3	-2.7
N	COMPUTER ASSOC INTL INC	48	18	46.00	+1.6	+3.7
O	COMPUTER HORIZONS CORP	15	10	13.38	+0.0	+0.0
O	COMPUTER NETWORK TECH	10	4	5.06	-0.3	-5.8
N	COMPUTER SCIENCES CORP	61	30	57.00	-1.8	-3.0
N	COMPUTER TASK GROUP INC	19	11	13.50	-0.6	-4.4
O	COMPUTONE SYS INC	6	0	0.19	+0.0	+0.0
O	COMSHARE INC	18	11	16.25	-0.3	-1.5
N	CULLINET SOFTWARE INC	16	6	10.63	-0.3	-2.3
O	CYCARE SYS INC	17	7	9.63	+0.4	+4.1
O	DUQUESNE SYS INC	33	12	30.00	-2.0	-6.3
N	GENERAL ELEC CO	113	71	109.00	+4.0	+3.8
N	GENERAL MTRS CORP (CLASS E)	50	24	38.88	+4.8	+13.9
O	HOGAN SYS INC	17	7	15.38	-0.1	-0.8
O	INFORMATION SCIENCES INC	4	1	1.00	+0.0	+0.0
O	INFOTRON SYS CORP	17	7	9.00	+0.5	+5.9
O	KEANE INC	16	5	8.13	+0.4	+4.8
N	LOGICON INC	38	22	27.88	-0.4	-1.3
O	LOTUS DEV CORP	28	9	26.25	+2.0	+8.2
O	MANAGEMENT SCI AMER	21	11	16.75	-0.3	-1.5
O	MCI COMM CORP	11	5	7.00	+0.5	+7.7
O	MICOM SYS INC	18	10	15.75	+0.3	+1.6
O	MICRO PRO INTL CORP	6	2	4.94	+0.2	+4.0
N	MICROSOFT CORP	100	26	96.75	+5.8	+6.3
O	NATIONAL DATA CORP	27	16	23.75	+0.5	+2.2
O	ON LINE SOFTWARE INT	24	10	22.50	+0.9	+4.0
O	ORACLE SYS CORP	29	7	23.75	+1.8	+8.0
N	PANSOPHIC SYS INC	21	12	19.00	-17.8	-48.3
O	POLICY MGMT SYS CORP	30	15	28.75	+2.0	+7.5
O	PROGRAMMING & SYS INC	13	8	10.75	+0.3	+2.4
O	REYNOLDS & REYNOLDS CO	42	27	35.50	+1.5	+4.4
O	SCIENTIFIC COMPUTERS INC	8	4	7.88	+0.4	+5.0
O	SEI CORP	31	15	29.75	+4.0	+15.5
O	SHARED MED SYS CORP	53	30	30.88	-3.8	-10.8
O	SOFTWARE AG SYSTEMS INC	22	10	13.00	+2.0	+18.2
O	SOFTWARE PUBG CORP	16	5	15.13	-0.9	-5.5
A	STERLING SOFTWARE INC	21	10	11.38	-0.3	-2.2
N	SUNGUARD DATA SYSTEMS	20	10	18.50	+1.0	+5.7
N	UCCEL CORP	36	18	33.38	+2.8	+9.0
N	URS CORP	21	13	20.50	+1.1	+5.8
O	VM SOFTWARE INC	45	13	42.13	-0.6	-1.5

Semiconductors

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 8 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADVANCED MICRO DEV	32	13	20.13	-0.3	-1.2
N	ANALOG DEVICES INC	25	14	20.75	+1.6	+8.5
O	ANALOGIC CORP	14	10	12.25	+0.5	+4.3
N	APPLIED MAGNETICS CORP	36	13	33.50	+4.4	+15.0
O	AVANTEK INC	23	14	15.63	-0.4	-2.3
O	HADCO CORP	7	3	6.13	+0.3	+4.3
O	INTEL CORP	44	16	43.75	+2.8	+6.7
O	MICRO MASK INC	7	2	6.38	-0.1	-1.9
N	MOTOROLA INC	58	34	57.63	+2.6	+4.8
N	NATIONAL SEMICONDUCTOR	17	8	14.63	-0.8	-4.9
N	TERADYNE INC	30	18	23.50	-0.5	-2.1

EXCH: N = NEW YORK; A = AMERICAN; P = PACIFIC; B = BOSTON; L = NATIONAL; M = MIDWEST; O = OVER-THE-COUNTER; S = SPLIT

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Peripherals & Subsystems

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 8 1987	WEEK NET CHNGE	WEEK PCT CHNGE
A	AM INTL INC	9	5	7.25	-1.0	-12.1
A	ANDERSON JACOBSON INC	4	1	2.25	-0.1	-5.3
O	AST RESH INC	23	11	17.25	+1.0	+6.2
O	AUTOTROL CORP	10	5	7.75	+0.0	+0.0
O	AVANT GARDE COMPUTING	7	3	3.75	+0.0	+0.0
O	BANCTEC INC	14	6	13.75	+0.5	+3.8
N	BOLT BERANEK & NEWMAN	60	37	50.00	+3.1	+6.7
A	CETEC CORP	9	5	5.88	+0.3	+4.4
A	COGNITRONICS CORP	6	2	3.25	+0.1	+4.0
N	COMPUGRAPHIC CORP	24	16	21.63	-0.4	-1.7
N	COMPUTERVISION CORP	23	10	18.63	+0.4	+2.1
N	CONRAC CORP	30	12	29.63	+0.1	+0.4
A	DATAPRODUCTS CORP	18	11	12.63	-0.5	-3.8
A	DATARAM CORP	18	7	7.75	-0.3	-3.1
O	DATA SWITCH CORP	9	5	6.38	+0.3	+4.1
O	DATUM INC	7	4	5.88	+0.1	+2.2
N	DECISION INDS CORP	15	8	8.38	+0.0	+0.0
O	ENDATA INC	9	5	8.50	+0.4	+4.6
O	EMC CORP	34	11	24.00	-1.0	-4.0
O	EVANS & SUTHERLAND	40	20	34.75	+2.3	+6.9
N	FLOATING POINT SYS INC	46	11	13.50	-0.5	-3.6
O	GANDALF TECHNOLOGIES	11	5	10.13	+0.6	+6.6
N	GENERAL DATACOMM IND	15	8	11.38	-0.5	-4.2
N	HAZELTINE CORP	30	16	29.75	+0.0	+0.0
O	ICOT CORP	13	6	6.00	-5.5	-47.8
O	INFORMATION INTL INC	18	13	14.00	-0.8	-5.1
O	INTECOM INC	7	3	3.00	+0.0	+0.0
O	INTERLEAF INC	16	8	15.50	+0.5	+3.3
O	MEGADATA CORP	7	2	5.50	+0.6	+12.8
A	MSI DATA CORP	17	10	15.75	-0.3	-1.6
N	NASHUA CORP	31	21	29.38	-0.1	-0.4
N	NETWORK SYS CORP	19	11	14.38	-0.5	-3.4
N	NORTH AMERN PHILIPS CORP	47	35	40.25	-0.4	-0.9
N	NORTHERN TELECOM LTD	46	27	44.88	+3.9	+9.5
O	NOVELL INC	52	15	49.50	+2.5	+5.3
N	PARADYNE CORP	11	4	6.00	-0.1	-2.0
A	PENRIL CORP	8	4	5.50	+0.3	+4.8
N	PLESSEY PLC	41	28	38.00	+1.5	+4.1
O	PRINTRONIX INC	15	10	11.00	+0.0	+0.0
N	QMS INC	18	11	13.75	-0.8	-5.2
O	RAMTEK CORP	7	3	4.88	+0.4	+8.3
N	RECOGNITION EQUIP INC	27	10	21.38	+0.3	+1.2
O	SCAN TRON CORP	19	11	13.00	+0.0	+0.0
N	SCIENTIFIC ATLANTA INC	18	9	17.00	+0.4	+2.3
O	SEAGATE TECHNOLOGY	42	10	35.00	-2.3	-6.0
N	STORAGE TECHNOLOGY	5	2	4.13	+0.0	+0.0
O	SUN MICROSYSTEM INC	35	11	31.75	+0.6	+2.0
A	T-BAR INC	8	5	7.88	+0.4	+5.0
A	TAB PRODS CO	21	12	20.25	+1.4	+7.3
O	TANDON CORP	8	2	5.25	+0.0	+0.0
A	TEC INC	6	3	3.38	+0.1	+3.8
N	TEKTRONIX INC	43	27	35.25	-0.1	-0.4
O	TELEVIDEO SYS INC	4	2	3.13	+0.3	+8.7
N	TELEX CORP	102	52	82.50	-5.5	-6.3
N	TIMEPLEX INC	41	14	34.63	-1.9	-5.1
N	TITAN CORP	12	6	7.25	+0.1	+1.8
O	VISUAL TECHNOLOGY INC	1	0	0.44	+0.0	+0.0
O	WYSE TECH	30	13	24.50	+2.9	+13.3

Leasing Companies

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 8 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	COMDISCO INC	30	15	27.75	-1.6	-5.5
N	CONTINENTAL INFO SYS	14	7	12.50	-0.1	-1.0
O	FINALCO GROUP INC	5	2	2.88	+0.0	+0.0
O	PHOENIX AMERN INC	8	3	5.75	+0.1	+2.2
O	SELECTERM INC	12	5	5.00	+0.0	+0.0
N	U.S. LEASING	52	38	50.38	-0.1	-0.2

Blue chips suffer

IBM enthusiasm dampens; Lotus, Ashton-Tate post gains

Expectations of another disappointing quarter for IBM appeared to dampen initial stock market enthusiasm for the new IBM Personal System/2 last week.

Big Blue began the week at 149½ but dropped to 144 by the close of New York Stock Exchange trading Thursday. IBM had plenty of company among the blue chips, as the Dow Jones industrial average suffered setbacks of 44 points Tuesday and 33 points Thursday.

IBM is set to announce its first-quarter earnings today. Analysts have predicted profits of $1 to $1.20 per share, well below $1.65 per share in the year-earlier quarter and possibly even below IBM's quarterly dividend of $1.10 per share.

In microcomputer software, potentially negative news about two companies did not affect their stock prices in over-the-counter trading. Lotus Development Corp. rose one point to 27¼ on Thursday, after it was sued by SAPC, Inc. for copyright infringement, and Ashton-Tate, which announced Monday it had canceled a 2 million-share public offering, gained 1½ points in four days of trading to close Thursday at 25.

CLINTON WILDER

Lautenberg

CONTINUED FROM PAGE 1

such as intellectual property rights, telecommunications trade, computer education, supercomputers and the formation of an Information Age Commission (see story page 117).

If Lautenberg's efforts on behalf of the computer community have been diluted, no one in that industry is complaining very loudly.

"We're extremely pleased with what he has done for the industry," says Olga Grkavac, vice-president of government relations for ADAPSO. "He's a strong ally in the Senate and has done many things to help the industry. We understand that realistically he must represent his state first, and considering that, he has an excellent track record."

"He never made any promises to the industry per se," says Bernard Goldstein of Broadview Associates, a Fort Lee, N.J., computer industry merger and acquisition firm. "Just to have a man who understands the industry in the Senate is enormously valuable."

"It was Frank's presence that intimidated the Japanese from trying to alter our software and resell it back to us," adds John Imlay, chairman of Management Science America, Inc. (MSA) in Atlanta. "And he's right on top of the big technical issues, which makes him invaluable to the industry."

Lautenberg remains committed to high-tech issues but is adamant about his role in the Senate. "The industry knows that I have to look beyond their interests to serve the interests of the country," he states. "Technology issues are vital, but I can't and won't commit my time just to industry needs."

The biggest problem for the computer industry, the senator says, is the very aggressive and clever foreign competition from countries such as Japan, West Germany, Taiwan and Korea that "would block delivery of our products."

"Are we going to be locked out of markets abroad until competition is built there and then they come back to compete with us?" he asks. "The government has a responsibility to see that we are not playing with an unfair set of rules."

Lautenberg is a strong proponent of extensive spending for computer education. He says that America's technology lead is fast being eroded because government does not provide support for computers in education, and industry has not rewarded science and math students as it has business students.

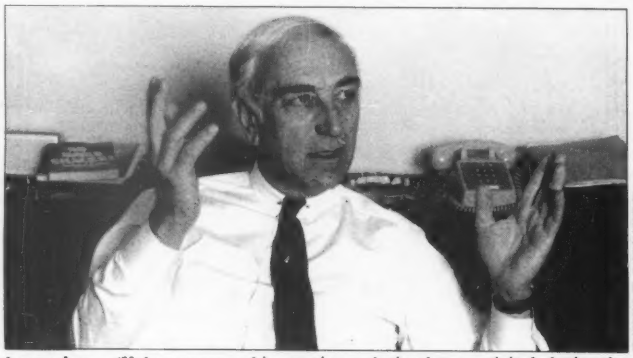
A recent National Science Foundation hearing revealed that a top science graduate with a Ph.D. can expect a $40,000 yearly salary upon graduation, while a business-school grad can command more than twice that amount.

"Where are people going to go?" Lautenberg asks. "They're going to Wall Street."

The former business leader is also tired of hearing his erstwhile counterparts complaining about government intervention but doing nothing to support programs for computer education in our schools.

"We ought to have industry stepping up and saying, 'We think it's just as important to have someone at the top who has a science background as it is to have a financial background,' " he says. "It's too easy for government to emulate business today and make the short-range decision. It feels good, it gets you votes. But I want to hear business saying, 'Look, government, make the long-term investment, provide the educational stimulation that's needed to keep us competitive.' "

Lautenberg is also a strong supporter of intellectual property rights. "Unless you reward innovation and stimulate creativity by letting the author know there is going to be some reward," he says, "you are not going to get it."



BRAD MARKEL, GAMMA LIAISON

Lautenberg: *'Unless you reward innovation and stimulate creativity by letting the author know there is going to be some reward, you are not going to get it.'*

Senator stands alone

Lautenberg is an anomaly. He and Lloyd Bentsen (D-Texas) are the only members of the Senate to come from the world of business, and Lautenberg stands alone as the only former chief executive officer of a publicly owned Fortune 500 corporation. As chairman of ADP, he presided over a $1 billion international operation with more than 16,000 employees. The company processed eight million paychecks per week and made Lautenberg a multimillionaire.

His move to the Senate was actually construed as a step down in many people's eyes. "I heard a lot of people say, 'Hey, Frank, what the hell are you doing here?' " Lautenberg says. "They felt that given the choice I had to make, they would have opted for the fame and fortune of the corporate world."

But Lautenberg, who never held an elected office until his current post, saw it as an obvious transition. "I saw America slipping out of leadership competitively," he says. "I sensed that the country seemed to have a lack of the kind of motivation that existed when I was a younger man growing up in the business world. We were slow to respond to the preservation of our technological edge, and I saw some of the vibrancy disappearing. I felt I had something to contribute."

Lautenberg is also a paradox — a Democrat spawned from big business. "That's not always comprehensible," he admits. "Frequently, when I'm introduced at meetings, people will say 'the Republican Senator from New Jersey.' They automatically assume that if I came out of the corporate world, I must be Republican."

But Lautenberg's Democratic ideals run deeper than his business interests. He says he was influenced by the struggles of his immigrant parents and government programs such as the GI Bill, which gave him the opportunity for a better life.

"I really believe that government has a responsibility not to provide but to encourage education, investment and competition, to seed projects that will produce something in the long run as opposed to simply walking away and saying, 'OK, let the free market take care of everything,' " he says. "Well, the free market is good most of the time, but government has a responsibility."

For Lautenberg, the transition from the executive suite to the seat of power has been as fluid and seemingly easy as his career.

After serving in World War II and earning an economics degree from Columbia University, Lautenberg returned to his hometown of Paterson, N.J., and sold insurance. In the same office building was the fledgling operation of Henry and Joseph Taub, a payroll service company called Automatic Payrolls, which was struggling to find clientele.

Lautenberg joined the Taubs in 1952 and became the sales and marketing arm of a business in its "missionary phase," Henry Taub says. "It took a lot of hard selling to convince someone to commit his payroll to be serviced by an outsider. Frank played a very valuable role in developing marketing concepts and a selling organization," he continues.

But this enterprise was not to be an overnight success. After 12 years, the company reached only $600,000 in revenue, and attempts to expand beyond the payroll business met with failure. In 1961, IBM introduced its 1401 computer, which allowed Automatic Payrolls — now known as ADP — to automate its operation.

Lautenberg (left) *with Automatic Data Processing cofounder Henry Taub in 1970.*

Sensing the opportunity, the founders took the company public and never looked back. "It was like the dike burst. There was opportunity everywhere," Lautenberg says.

The 1401 technology allowed ADP to expand from a New Jersey and New York operation to a national corporation. Lautenberg spearheaded the effort, criss-crossing the country to set up service bureaus. Rather than starting from scratch, he acquired small local businesses — more than 100 of them — and brought them into the ADP fold.

The newly public company was valued at $1.2 million in 1961. Lautenberg remembers that at the time there were no thoughts of wealth and fame.

"From 1963 to 1985, we grew from $1 million to $1 billion in revenue, and no one was more surprised than the three of us. We sat around once and speculated how big ADP could become. Henry said $2 million, and I said $10 million," he recalls. "But we had laid the groundwork, and all the personal input suddenly came to fruition."

Lautenberg was not satisfied with business success. He became engrossed in formulating and encouraging an industry association and later became president of ADAPSO. MSA's Imlay calls him "the father of the computer services industry. He had the foresight to visualize the need for an association and then took the time to build it to what it is today."

Charitable contributions

At the same time, Lautenberg immersed himself in charitable work for the National United Jewish Appeal and other nonreligious charities. Watching his 42-year-old father die of cancer sparked a lifelong interest in supporting cancer research. In his father's memory, he founded the Lautenberg Center for General and Tumor Immunology in Jerusalem.

He laid the groundwork for his political aspirations by taking an active interest in regional economic development and was appointed commissioner of the New Jersey Economic Development Authority and the Port Authority of New York and New Jersey in 1978.

In a major political upset, Lautenberg came from nowhere to defeat Rep. Millicent Fenwick (D-N.J.) for the Senate seat in 1982. Fenwick, a politician of such renown that she was a model for a "Doonesbury" character, took Lautenberg lightly and paid the price.

Spurred by his dynamism and an effective, well-financed campaign (with strong funding from computer industry interests), Lautenberg won the election and headed to Washington.

Although those outside the computer industry were stunned, Lautenberg's colleagues were not surprised. They were ecstatic at the outcome.

"We in the industry were very proud of him," says Broadview's Goldstein, who headed a computer industry committee to elect Lautenberg. "We thought it would be terrific for the industry to have somebody who had come from our midst to serve in the Senate. Lord knows there are enough bankers and lawyers in the Senate. So to have somebody who understood the infor-

A Lautenberg scorecard

Despite leaving the Commerce Committee for his current assignments on the Budget Committee, Appropriations Committee and Environment and Public Works Committee, Sen. Frank Lautenberg (D-N.J.) has produced significant legislation on behalf of the information processing industry during his tenure. Among his legislative proposals are the following:

Intellectual property rights. Early in his term, Lautenberg introduced an amendment to the 1984 Trade and Tariff Act that helped pressure Japan into dropping plans to abolish copyright protection of software. Had that loss of copyright protection gone through, Japanese firms could have paid the U.S. vendor a fee and then turned around and resold the product for their own profit in worldwide markets. Lautenberg traveled to Japan to speak at a World Computing Congress in 1984 and negotiated with the Japanese on behalf of the industry, providing a warning shot that is marked as a turning point in the controversy.

In addition, Lautenberg introduced legislation, eventually incorporated into the Trade and Tariff Act, that provides for the withdrawal of special trade benefits from nations that do not provide adequate protection of intellectual property.

Current legislation from his office, co-sponsored by 20 Senate colleagues and now part of Sen. Lloyd Bentsen's (D-Texas) Trade Bill, calls for the strengthening of rights of U.S. inventors and innovators to bar the importation of products that infringe on U.S. patents, copyrights, trademarks, trade secrets and computer chip designs. In the drafting stage is a bill to toughen penalties for copyright infringement in the wholesale domestic software market.

Telecommunications trade. Lautenberg has sponsored legislation and has been an active voice in trade negotiations to break down barriers against exports of American high-tech and telecommunications products. He argues that with the breakup of AT&T, the U.S. market has been flooded with foreign telecommunications imports while foreign markets remain largely closed.

In addition, Lautenberg has led the fight to authorize and secure funding for the Advanced Communications Technology Satellite (ACTS), an experimental advanced switching communications satellite. Designed to leapfrog current U.S. and foreign technology, ACTS has faced stiff opposition from the Reagan administration, which proposed terminating the program in all but one of the last four years.

Supercomputers. The senator continues to support the country's supercomputer effort and was instrumental in getting one of the nation's four supercomputer centers built at Princeton University.

Computer education. Lautenberg says he believes strongly that every school in the U.S. should have computers and teachers trained to employ them. He introduced legislation to that end, and, although the bill did not pass in the Senate in its first attempt, it was reintroduced in March with strong support from Sens. Edward Kennedy (D-Mass.), Christopher Dodd (D-Conn.) and Timothy Wirth (D-Colo.) and a promise from Senate Majority Leader Robert Byrd (D-W. Va.) to move the bill through.

> LAUTENBERG traveled to Japan to speak at a World Computing Congress in 1984 and negotiated with the Japanese on behalf of the industry.

Information Age Commission. Perhaps his best-known high-tech legislation, Lautenberg's Information Age Commission Bill (co-sponsored with Georgia Sen. Sam Nunn) passed in the Senate last year but died in the House of Representatives. The bill sought to create a forum for discussions and targeted research on the impact of computer and communications systems on the nation. In addition, the commission would "present critical alternative views and choices to the president, Congress and the public so that such views and choice could serve as a catalyst for change, if necessary, and maximize the benefits of the information age to our society."

According to Lautenberg's legislative director, Mitchell Ostrer, the bill is going to be reintroduced, probably before the upcoming Easter recess. He points out that the computer industry paid little attention to the bill until it passed in the Senate last year, and this time around, there is broad and active interest from the industry.

"If we can get a consensus from the private sector, the bill should go through the House," Ostrer says.

GLENN RIFKIN

mation world, what was happening and the effect we were having economically, socially and politically was enormously exciting to us all."

Despite playing in an arena where the game is political hardball, one is hard-pressed to uncover a negative word about the 62-year-old Lautenberg. "He is extremely effective for New Jersey," says Sen. Bill Bradley (D-N.J.), his senior counterpart. "His insights into business are listened to by many people, but more importantly, he brings a set of values. He's not just a bottom-line businessman; he's a businessman who did well and cares about people."

Being a businessman in the august body can be trying, especially for a former CEO. Early in his term, Lautenberg was often frustrated by the snails pace of Senate bureaucracy.

"Sure, it's frustrating," he admits. "There are so many interests represented, everybody's got a point of view, and it's too bad we can't do without the enormous delaying tactics in considering an issue. But the frustration is worth it because I feel like I'm playing a role in perhaps the most important arena in the world."

Lautenberg shows no sign of slowing down and intends to run for re-election in 1988.

Lautenberg is intent on seeing the country regain its economic place while maintaining its moral and political leadership in the world. He wants to become more involved with human rights issues. In addition, he would like to see more members of the business community aspire to political office.

"We have primarily lawyers and professional legislators here, and frankly, we start to get an inbreeding," he says. "We need more people here who understand the business community and can encourage the private sector to make the investment, create the jobs."

Though he maintains an obvious interest in ADP, it is unlikely Lautenberg would return to the computer business if he were not re-elected. But he has no thoughts about that happening.

"I started at the top here, and I'd just as soon finish at the top at the time of my choosing," he declares.

Sun chops price of workstation

BY NINAMARY BUBA MAGINNIS
CW STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. reduced the price last week of its entry-level 3/50M workstation from $7,900 to $4,995, positioning it aggressively against the latest high-end personal computers.

The move will make the 3/50M more competitive against IBM Personal System/2 Models 60 and 80, announced two weeks ago, and the Apple Computer, Inc. Macintosh II.

The 3/50M workstation comes with a built-in Ethernet connection, performance of 1.5 million instructions per second, 4M bytes of memory, a 19-in. monochrome monitor with 1,152- by 900-pixel resolution and Sun's version of the Unix operating system.

Sun expects the price cut to increase its market share of low-end workstations, particularly in the electronic publishing, design automation and computer-aided software engineering markets, according to Bernie Lacroute, Sun's executive vice-president.

Although Sun is already selling into those markets, the vendor expects the lower entry price into the workstation arena will attract more customers, a Sun spokesman said.

The vendor also said he expects third-party personal computer-based software vendors to consider porting their PC applications to the Unix environment.

Analysts say workstation vendors are looking for new market opportunities to increase sales. Aside from traditional engineering and scientific markets, Sun is targeting its 3/50M at more commercial environments such as architectural design and high-performance office automation, Lacroute explained.

Although the price reduction moves the 3/50M into the high-end PC arena, Sun's is a Unix-based workstation that may not be attractive to PC users who have invested in Microsoft Corp.'s MS-DOS-based applications, according to Bruce Jenkins, a senior editor at Danatech, Inc., a Cambridge, Mass., consulting firm.

Sun claims to have shipped more than 30,000 workstations as of Dec. 31, 1986, and ships about 2,000 workstations a month, while Apollo Computer, Inc. said its installed base is 36,000. The numbers are miniscule when compared with the millions of IBM and compatible PCs installed worldwide, Jenkins said. An Apple spokeswoman called Sun's price cut a defensive move against the encroachment of high-end personal computers on the workstation market. "Sun doesn't have a broad range of productivity applications or distribution channels, so we don't feel we're head-to-head with them," said Ronnie Sarmanian, an Apple spokeswoman.

Apollo, Sun's leading competitor, does not offer a workstation that matches Sun's low-end 3/50M. "Our low-end workstations are still quite a step above the Sun 3/50M in terms of performance," said Tony Sapienza, a company spokesman.

Apollo's low-end Domain Series 3000 Personal Workstation family starts at $9,900. The firm has no plans to cut its low-end price, Sapienza said.

A fully configured Sun-3/50M with a 71M-byte mass storage system and 60M-byte tape cartridge backup system costs $9,995. A Sun-3/50M with a 141M-byte mass storage system and a 60M-byte tape cartridge backup lists at $11,495.

Sun reduced its optional floating-point coprocessor from $700 to $400 and slashed memory expansion prices by 33%. Parity memory expansion for the Series 100 workstations costs $500 per 1M byte.

The firm also cut 3/50M maintenance to $49 per month.

System overlap

Sun's price reduction eliminates one key distinction between personal computers and workstations

System	Memory (in bytes)	Price
Sun 3/50M	4M	$4,995
Apollo 3000	2M	$9,900
IBM Personal System/2 Model 80	1M	$6,995
IBM RT PC	4M	$10,000
DEC Vaxstation 2000	4M	$10,500
Apple Macintosh II	1M	$3,898

CW CHART

Unisys upgrades A 15 systems

BY JAMES CONNOLLY
CW STAFF

DETROIT — Unisys Corp. last week moved its MCP/AS operating system onto the high-end models of its A series mainframes with promises of 20% average performance gains on those A 15 models.

In addition to replacing the MCP operating system with MCP/AS, Unisys expanded memory capacities on the A 15 and the second tier of the A series, the A 12, allowing double the memory on four A 15 models and 50% increases on the A 12.

The A 15s running MCP/AS are being renumbered as new models, with the A 15 Models F, H, I, J, K, L, M and N being replaced by the FX, HX, IX, JX, KX, LX, MX and NX. The announcement came 18 months after Unisys predecessor Burroughs Corp. began shipping the A 15 with MCP and announced development of MCP/AS.

The newer operating system was made available with the A 12 in March 1986 and was added to the mid-range A 10 last October. A key feature of MCP/AS is the ability to address 24G bytes of memory, rather than the 6M bytes that a single program or data area could address under MCP, according to the company.

"The A 15, the top-of-the-line machine in the A series family, competes favorably with other large-scale mainframes on the market, including the IBM 3090," said Fred R. Meier, vice-president of corporate program management for Unisys.

Improves performance

"The performance improvements further enhance the exceptional price/performance of the A 15. We think it is significant that improved performance averaging 20% can be achieved with no change in hardware or application software," Meier added.

A Unisys spokesman said the 20% performance gain is an average and that some applications would experience greater gains, particularly those such as interactive transaction processing-oriented applications that previously required high levels of virtual memory.

There is no installation charge for customers who acquired A 15 systems within the past year because those systems were delivered with MCP/AS capabilities. Customers who received A 15s during the first six months of shipments will pay $40,000 for the upgrade. For most customers, the move to MCP/AS involves having a field engineer load the operating system via floppy disks.

The memory expansions consist of adding more boards with the same memory technology as had been used previously in the A 15 and A 12.

Maximum memory for the A 12 was increased from 96M to 144M bytes. Memory was boosted from 48M to 96M bytes on the A 15 Model FX and from 96M to 192M bytes on Models HX, IX and JX. Maximum memory remains at 192M bytes for Models KX, LX, MX and NX.

The memory upgrades are available in 12M-byte increments for the A 15 at a cost of $144,000 per increment. Memory upgrades for the A 12 are available in 24M-byte increments at a cost of $288,000 per increment.

Prices for the A 15 range from $2.9 million for an A 15 Model FX, which includes a CPU, I/O subsystem, 24M bytes of memory and operator and maintenance consoles, to $8.4 million for a four-CPU A 15 Model NX with two memory subsystems totaling 36M bytes, two I/O subsystems and the operators and maintenance consoles.

DB2 update

FROM PAGE 1

type support to DB2, which would allow DB2 files to store information in the form of commonly used time-of-day and date notations rather than numerical quantities requiring translation.

In addition to enhancements to DB2, IBM is likely to announce a version of SQL/DS, the relational DBMS that runs under the firm's VM and VSE operating systems, for the 9370 processor, the low end of the 370 family of mainframes, industry sources said.

The new release of QMF, which includes the programmer-oriented Structured Query Language, and end-user-oriented Query By Example, is expected to incorporate several changes. For one, it would have to support the same time and date data types in the enhanced DB2. For another, many users have said they find its reporting capabilities constricting and would like to see more flexible reporting formats.

The QMF forms capability allows users to construct the formats in which they want data from DB2 presented on their screens. Columns can be rearranged, but if the user decides to add a column that was not in his original query, "he has to start all over again," Merkle said.

Industry sources also said they expect IBM to announce an enlarged role for Data Extract Facility.

CORRECTIONS

The name of William A. Pedersen and Associates [CW, Feb. 9] in Sunnyvale, Calif., maker of Plot 220 graphics software, was incorrectly spelled.

Analyst David Moschella of International Data Corp., in the article "Mixed bag seen for high-tech growth" [CW, March 16], said the VAX may stand almost side by side with IBM's 370 and that sales of IBM's 370 had grown by 6%, not IBM's 9370 as reported.

Micom Systems, Inc.'s NP600 product [CW, March 30] includes the company's own version of the Transmission Control Protocol/Internet Protocol.

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INSIDE LINES

Going for the jugular. DEC sales representatives can tap DEC's national IBM Migration Expertise Center, which is staffed with ex-IBM shop MIS managers, DP managers, consultants and programmers, a DEC document states. The center is geared toward DEC's IBM/RPG Migration Program, which DEC hopes will replace multiple IBM System/34 and 36 machines with 20 to as many as 700 DEC VAX computers. Under the program, DEC is also trying to convert IBM value-added resellers and IBM Marketing Assistance Program members to DEC OEMs. The program hinges on showing IBM minicomputer users that software conversion is rapid and painless, the document says.

No stopping them. Tandem Computers has scheduled a splashy product announcement for April 20 in San Francisco. The introduction is expected to include a line of Unix-based systems that can be integrated with Tandem's existing network.

Digital Research reaches out. Marilyn J. Bohl, product manager for IBM's DB2 for nine years, has resigned her post and become the vice-president for product development at Digital Research. The personal computer software firm offered her the opportunity "to keep learning and expanding my capabilities," she said, adding that the possibility of Intel 80386-based products in networking, file servers and SQL application programming interfaces attracted her to Digital Research. IBM has announced no replacement. Digital Research, producer of the CP/M PC operating system, has been striving for an industry-leading hit since IBM standardized on the Microsoft MS-DOS operating system and pulled the plug on growth of 8-bit micros.

386 Primed. Prime Computer is preparing to introduce its first Intel 80386-based system. Due within a month, the machine will run the Unix operating system and will likely be targeted for CAD/CAM environments.

Welcome to our domain. Apollo Computer is expected to announce today enhancements to its Domain networking system that will allow it to work in conjunction with other vendors' networking systems. The enhancements will allow other networking systems to take advantage of Domain's proprietary capabilities such as transparent access and the sharing of files with other workstations.

Don't give up the token. Many Token-Ring users were disappointed, and IBM watchers surprised, when IBM failed to introduce a 16M-bit Token-Ring adapter card two weeks ago. But many of these observers are convinced the card not only exists but will be introduced by IBM, along with other communications products, within the next 60 days.

Apartheid still an issue. Despite IBM's divestiture of its South African subsidiary last fall, some of its shareholders are calling for further action. A stockholder proposal to be voted on at the annual meeting April 27 calls for the company to end all sales of computers, parts, software and services through its employee-owned operation in the racially divided nation. As expected, the IBM board has recommended a vote against the proposal, which was submitted by church groups holding 146,500 IBM shares.

What's in a name? The establishment of Honeywell Bull has already had its share of conflicts. One sticky point reportedly was Honeywell, Inc.'s reluctance to have its name incorporated in the new title, while partners Compagnie des Machines Bull and NEC wanted "Honeywell" included for name-recognition value, observes Don Bellomy, editor of International Data Corp.'s "Computer Industry Report." There have also been squabbles over the new company's relationship with Honeywell's Federal Systems Division, which is expected to be the new firm's biggest customer. Federal Systems reportedly won the right to buy computer products from vendors other than Honeywell Bull but only after agreeing to buy an unspecified percentage of equipment from Honeywell Bull, Bellomy said. In addition, the new company won a concession that it can collect a chunk of the profits that Honeywell, Inc. reaps from Federal Systems sales.

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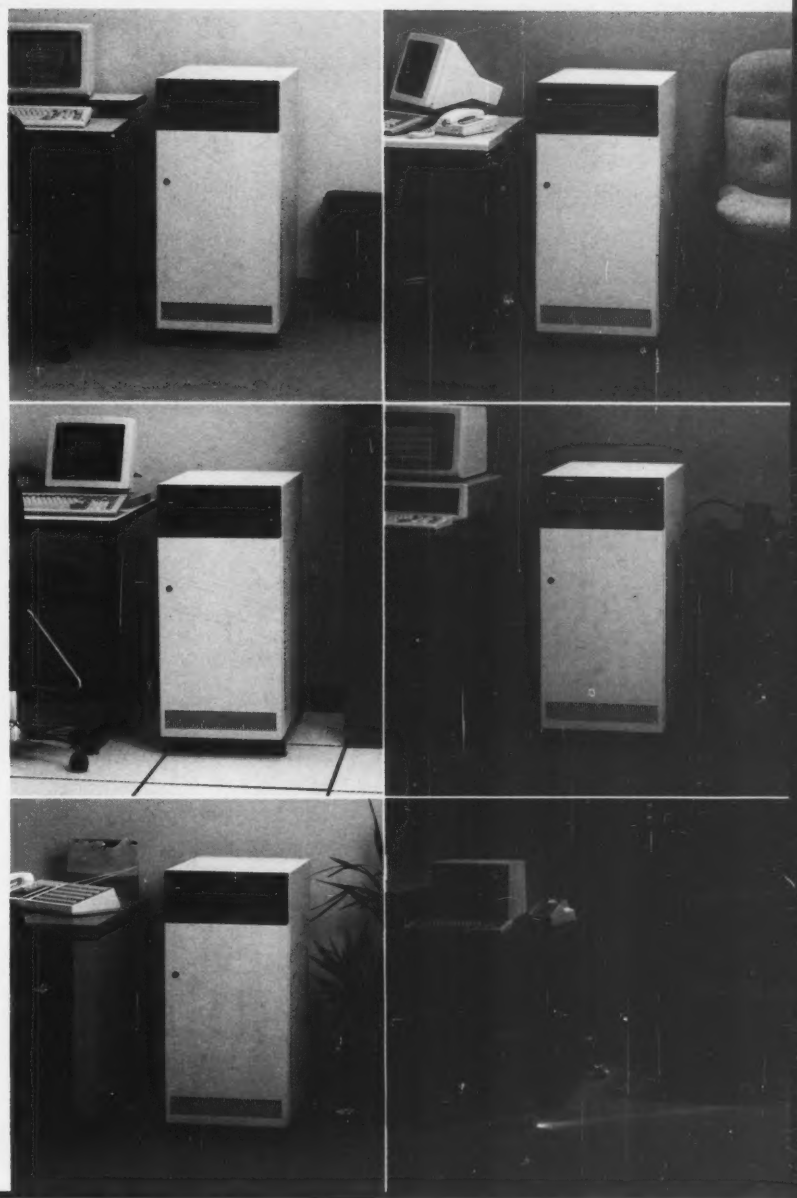

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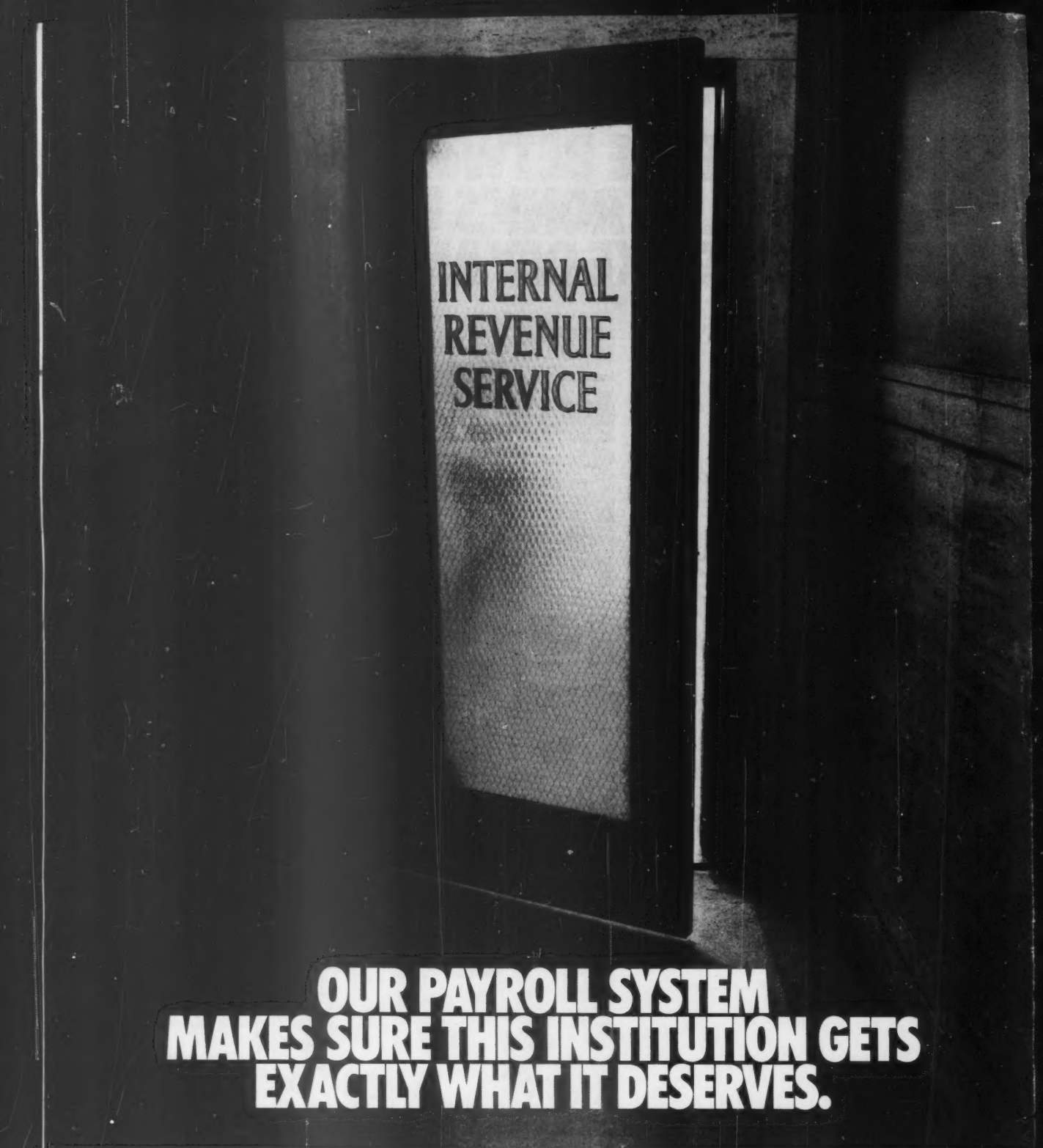

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